

SERVICE MANUAL



ES526/EX536/EX531/CB2800/ES526L/EX536L/DS316L

Date	Revise Version	Description
2009.05.14	V1.0	Initial Issue
2009.11.10	V2.0	Add EX531/CB2800
2010.03.12	V3.0	Add ES526L/EX536L
2010.07.02	V4.0	Add DS316L Add Burn-in environment setting in Chapter 4

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Approve: *Aliek*

Preface

This manual is applied to ES526/EX536/EX531/CB2800/ES526L/EX536L/DS316L projection system. The manual gives you a brief description of basic technical information to help in service and maintain the product.

Your customers will appreciate the quick response time when you immediately identify problems that occur with our products. We expect your customers will appreciate the service that you offer them.

This manual is for technicians and people who have an electronic background. Please send the product back to the distributor for repairing and do not attempt to do anything that is complex or is not mentioned in the troubleshooting.

Notice: The information found in this manual is subject to change without prior notice. Any subsequent changes made to the data herein will be incorporated in future edition.

ES526/EX536/EX531/CB2800/ES526L/EX536L/DS316L Service Manual

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Manual Version 4.0

ES526/EX536/EX531/CB2800/ES526L/EX536L/DS316L Comparison List

Parts	EX531	EX536	EX536L	ES526	ES526L	DS316L	CB2800
USER'S MANUAL	36.8EH01G001		36.8HN01G001	36.8EH01G001	36.8HN01G001		36.8GK01G001
REMOTE	45.8EF02G001						45.89U01G001
REMOTE(For China)	NA	45.8EF02G002	NA	45.8EF02G002	NA		
SPEAKER	49.8CQ01G001		NA	49.8CQ01G001	NA	49.8CQ01G001	NA
IO COVER MODULE	70.8BF03GR01		70.8HQ07GR01	70.8EH13GR01	70.8HN10GR01	70.8HN11GR01	70.8GK02GR01
PCBA MAIN BOARD	80.8EZ01G001	80.8BF01G006	80.8HQ01G001	80.8EH01G008	80.8HN01G001		80.8GK01G002
ENGINE MODULE	70.8EZ01GR01	70.8BF02GR01		70.8EH14GR01			
DMD CHIP	48.8EZ01G001	48.8CQ01G003		48.8EH01G001			
TOP COVER MODULE	75.8EH01G001		75.8HQ01G001	75.8EH01G001	75.8HQ01G001		

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Serial Number System Definition	I
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Introduction

1-1 Highlight

No	Item	Description
1	Technology	<ul style="list-style-type: none"> • TI, 0.55" S450 SVGA DMD, Dark Chip 3 (For ES526/CB2800/ES526L/DS316L) • TI, 0.55" S450 XGA DMD, Dark Chip 3 (For EX536/ EX536L) • TI, 0.55" S450 XGA DMD, Dark Chip 1 (For EX531)
2	Dimension (W x D x H)	• Outside Dimension 286.3 x 192.0 x 84.6 mm (excluding rubber feet)
3	Weight	• 5.1 lb
4	Power Supply	• Auto-ranging: 100V ~ 240V \pm 10%, 50-60Hz
5	Keystone Correction	• +/-40 degree (TI spec.)
6	Resolution	<ul style="list-style-type: none"> • Native Resolution: 800 x 600 (For ES526/CB2800/ES526L/DS316L) • Native Resolution: 1024 x 768 (For EX536/EX531/EX536L)
7	Power Consumption	<ul style="list-style-type: none"> • Full mode: 255W (Max) @110V AC 233W (Type) @110V AC ECO mode: 230W (Max) @110V AC 207W (Type) @110V AC
8	Throw ratio	• 1.95~2.15 (Distance/Width)
9	Projection lens	<ul style="list-style-type: none"> • YM39/FPL62 (For ES526/CB2800/ES526L/DS316L) • YM09X/FPL30 (For EX536/EX531/EX536L)
10	Lamp life	<ul style="list-style-type: none"> • 3000 Hours, 50% Survival Rate (Standard-Mode) • 4000 Hours, 50% Survival Rate (ECO-Mode)
11	Offset	• 115% \pm 5%
12	Video compatibility	<ul style="list-style-type: none"> • NTSC: NTSC M 3.58MHz, 4.43MHz • PAL: PAL B/D/G/H/I/M/N, 4.43MHz • SECAM: SECAM B/D/G/K/K1/L, 4.25/4.4 MHz • Component: 480i/p, 576i/p, 720p(50/60Hz), 1080i/p(50/60Hz), 1080p(24/50/60Hz)
13	Aspect ratio	• 4:3, 16:9 I, 16:9 II, NATIVE, AUTO

No	Item	Description
14	System Controller	<ul style="list-style-type: none"> • DDP2431 ASIC Controller with Brilliant Color
14	Input Connections	<ul style="list-style-type: none"> • For ES526 <ul style="list-style-type: none"> • VGA-in: D-sub 15 pin x 1 • Composite: RCA x 1 • S-video: Mini-DIN 4 pin x 1 • Audio-in: (Green coded port) Mini Jack x 1 • For EX536/EX531 <ul style="list-style-type: none"> • VGA-in: D-sub 15 pin x 2 • Composite: RCA x 1 • S-video: Mini-DIN 4 pin x 1 • Audio-in: (Green coded port) Mini Jack x 1 • For CB2800 <ul style="list-style-type: none"> • VGA-in: D-sub 15 pin x 1 • For ES526L/DS316L <ul style="list-style-type: none"> • VGA-in x 1 (compatible with HDTV component/SCART) • Composite Video x 1 • S-Video (Mini DIN) x 1 • For EX536L <ul style="list-style-type: none"> • VGA-in x 1 (compatible with HDTV component/SCART) • 2nd VGA-in x 1 (compatible with HDTV component) • Composite Video x 1 • S-Video (Mini DIN) x 1
16	Color Wheel	<ul style="list-style-type: none"> • 6 Segments; RGBCYW (R85Y37G90C28W42B78) 2x,7200 RPM
17	Lamp	<ul style="list-style-type: none"> • 185W Philips E20.9
18	Temperature	<ul style="list-style-type: none"> • Operating (Full-power-mode): 5 ~ 35 °C • Non-operation (storage): -10°C ~ 60°C • For ECO model: 5 ~ 40 °C
19	Altitude	<ul style="list-style-type: none"> • Operating (Full-power-mode): 0 ~ 2,500 ft, for 5°C~35°C 2500 ft ~ 5,000 ft, for 5°C~30°C 5,000 ft ~ 10,000 ft, for 5°C~25°C

1-2 Compatible Mode

Computer Compatibility (Analog)

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
VGA	640 x 350	70	31.5
	640 x 350	85	37.9
	640 x 400	85	37.9
	640 x 480	60	31.5
	640 x 480	72	37.9
	640 x 480	75	37.5
	720 x 400	70	31.5
	720 x 400	85	37.9
SVGA	800 x 600	56	35.2
	800 x 600	60	37.9
	800 x 600	72	48.1
	800 x 600	75	46.9
XGA	1024 x 768	60	48.4
	1024 x 768	70	56.5
	1024 x 768	75	60
WXGA	1280 x 720	60	45
	1280 x 768	60	47.8
	1280 x 800	60	49.702
SXGA	1152 x 864	60	53.5
	1152 x 864	70	63.8
	1152 x 864	75	67.5
	1152 x 864	85	77.1
	1280 x 1024	60	63.98
	1280 x 1024	75	79.98
	1280 x 1024	85	91.1
	1280 x 960	60	60.0
SXGA+	1400 x 1050	60	63.98
UXGA	1600 x 1200	60	75
MAC LC 13"	640 x 480	66.66	34.98
MAC II 13"	640 x 480	66.68	35
MAC 16"	832 x 624	74.55	49.725
MAC 19"	1024 x 768	75	60.24
MAC	1152 x 870	75.06	68.68
MAC G4	640 x 480	60	31.35
i Mac DV	1024 x 768	75	60
	1152 x 870	75	68.49
	1280 x 960	60	60

Note: If the Computer Compatibility supportive signal is different from User's Manual, please refer to User's Manual.

Disassembly Process

2-1 Equipment Needed & Product Overview

1. Screw Bit (+): 105
2. Screw Bit (+): 107
3. Screw Bit (-): 107
4. Hex Sleeves 5 mm
5. Tweezers
6. Projector

** Before you start: This process is protective level II. Operators should wear electrostatic chains.*

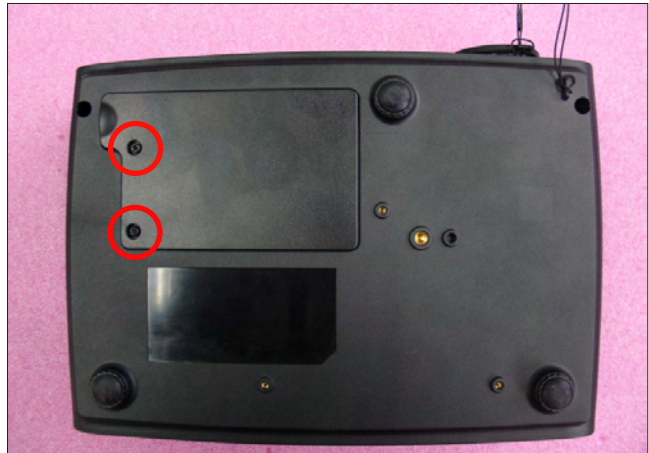
** Note: - If you need to replace the main board, you have to record the lamp usage hour.*

- As the disassembly process of EX536/ES526/EX531/CB2800/ES526L/EX536L/DS316L is the same, we take ES526 for example here.



2-2 Disassemble Lamp Cover Module

1. Unfasten 2 screws (as red circle) on the Lamp Cover.
2. Disassemble the Lamp Cover Module.



2-3 Disassemble Lamp Module

1. Unfasten 2 screws (as red circle) on the Lamp Module.
2. Take off the Lamp Module.



2-4 Disassemble Top Cover Module

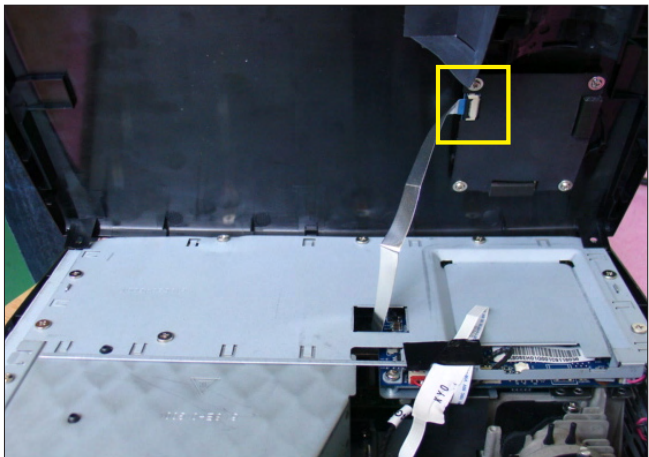
1. Unscrew 2 screws (as red circle) from the Bottom Cover.
2. Unscrew 2 screws (as green circle) from the IO Cover .
3. Remove the Top Cover Module.



Note: - When you remove the Top Cover, take care of the connector (as yellow square) which connected Main Board and Keypad Board Module, then unplug it from Keypad Board Module.

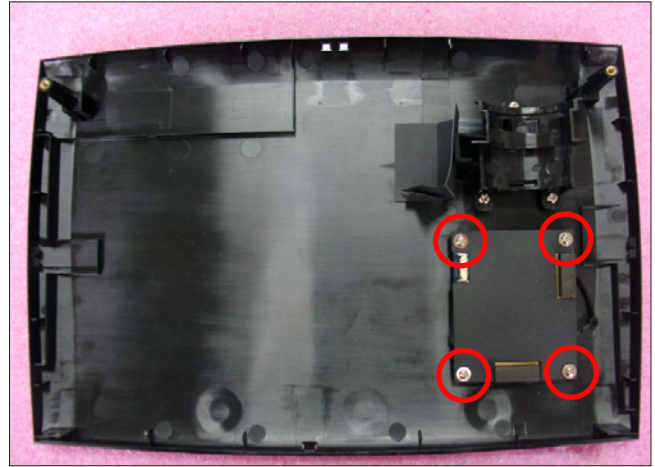
- Avoid damaging by pulling keypad FPC cable.

- Make sure the FPC cable plug into the correct ports when assembling it.



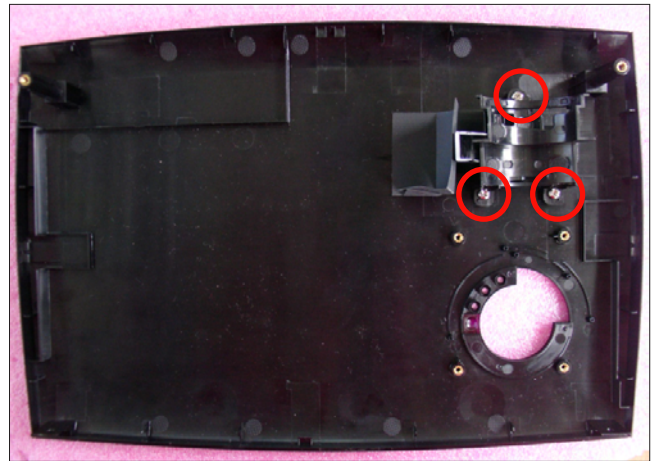
2-5 Disassemble Keypad Board Module (Not for ES526L/EX536L/ DS316L)

1. Unscrew 4 screws (as red circle) to disassemble the Keypad Board Module from the Top Cover Module.
2. Tear off mylar from the Keypad Board Module.
3. Separate the Keypads from the Top Cover Module.

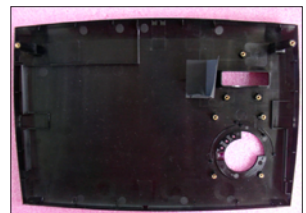


2-6 Disassemble Zoom Ring

1. Unscrew 3 screws (as red circle) from the Top Cover Module.
2. Remove the Zoom Ring.

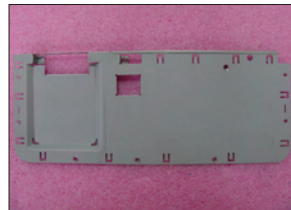
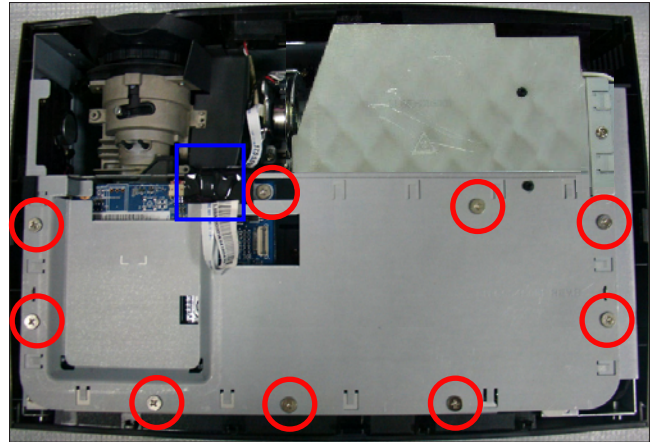


Zoom Ring

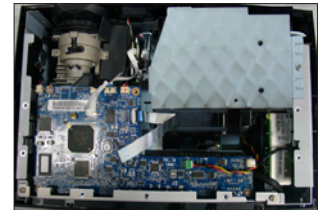


2-7 Disassemble Top Shielding

1. Unscrew 9 screws (as red circle).
2. Tear off 3M tape (as blue square).
3. Disassemble the Top Shielding.

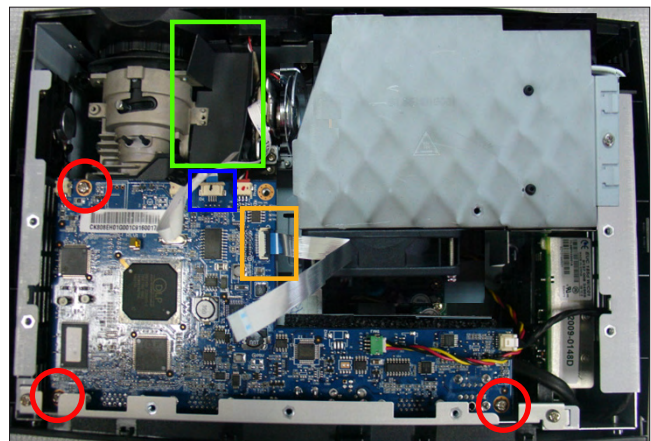


Top Shielding

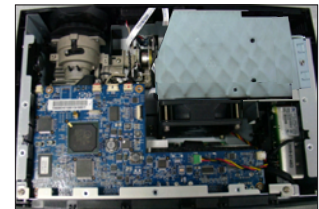


2-8 Disassemble Main Board Module

1. Unscrew 3 screws (as red circle).
2. Tear off the black mylar (as green square).
3. Unplug 1 connector (as orange square) to remove the FPC cable.
4. Unplug 1 connector (as blue square) of Color Wheel.

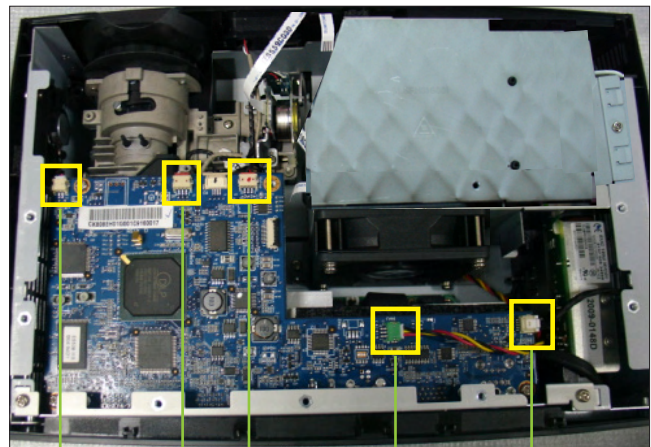
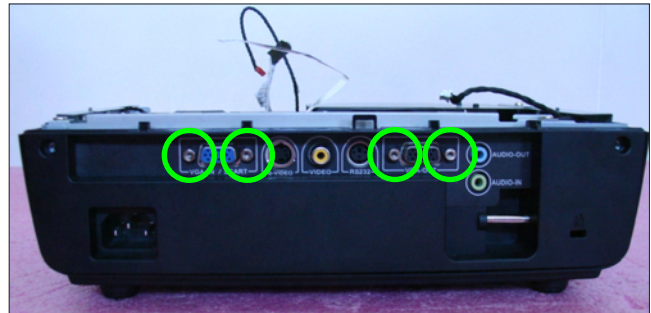


FPC cable


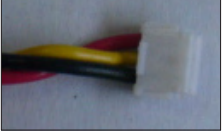
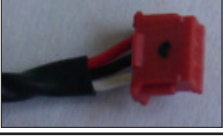
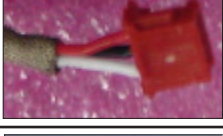
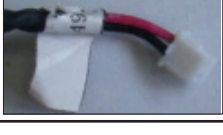


5. Unscrew 4 hex screws (as green circle) from IO Cover.
6. Unplug 5 connectors (as yellow square).

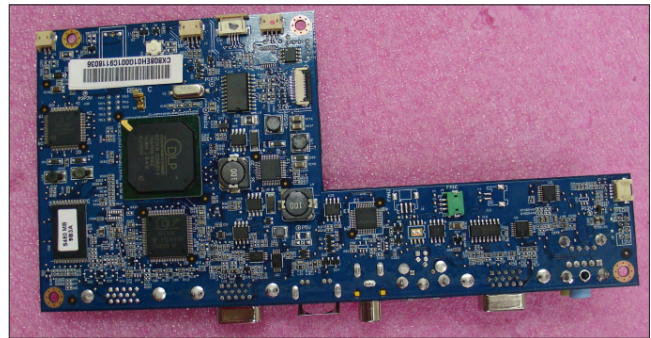
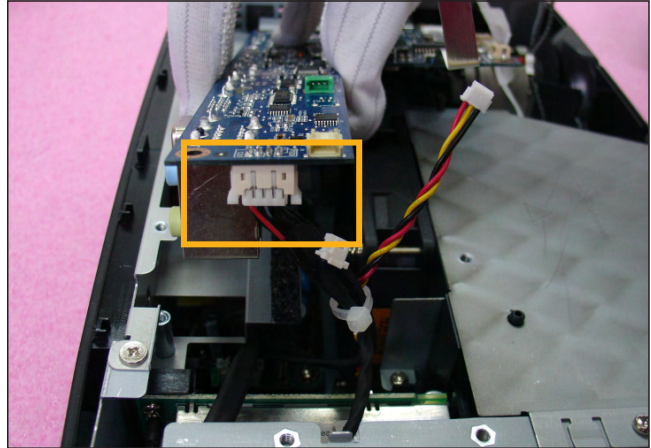
Note: - Make sure cables plug into the correct ports when assembling the unit.



Please refer to the below table details of each connector on Main Board.

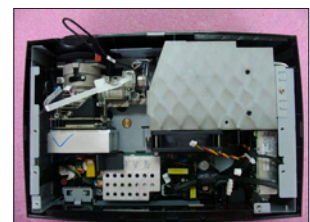
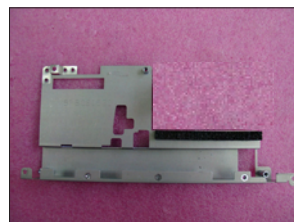
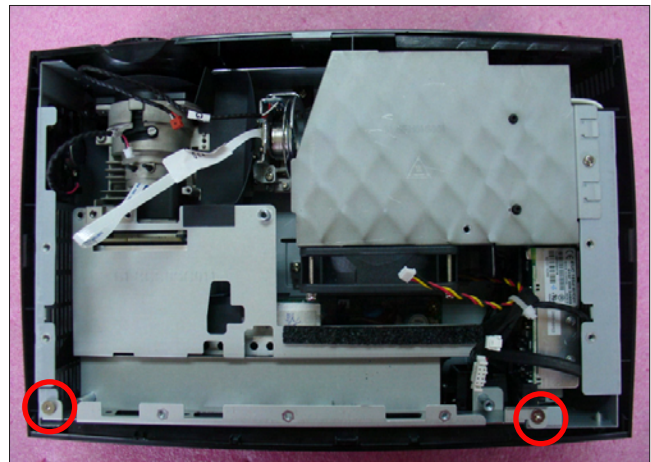
Item	Male Connector on Main Board	The key feature	Figure
A	Lamp Driver	Black wire tube (5 pin)	
B	Fan	Compose of Red/Yellow/Black Wire (3 pin)	
C	Photo Sensor	Compose of Red/Black/White Wire and Black wire tube (3 pin)	
D	IR	Compose of Red/Black/White Wire and Gray wire tube (3 pin)	
E	Speaker	Compose of Red/Black Wire and Black wire tube (2 pin)	

7. Unplug 1 connector (as orange square).
8. Remove the Main Board Module.



2-9 Disassemble Main Board Shielding

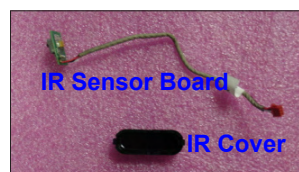
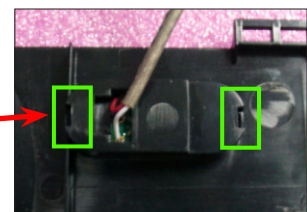
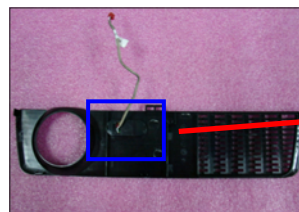
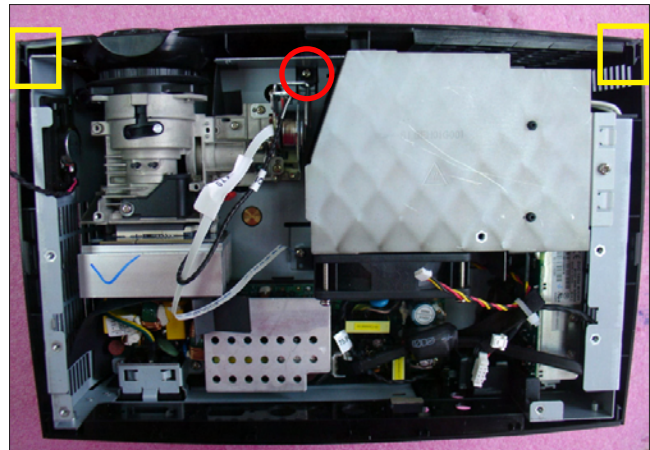
1. Unscrew 2 screws (as red circle).
2. Disassemble the Main Board Shielding.



2-10 Disassemble Front Cover Module and IR Sensor Board

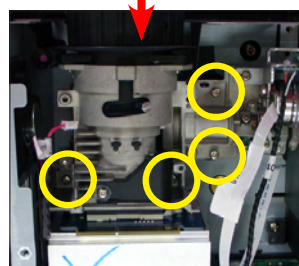
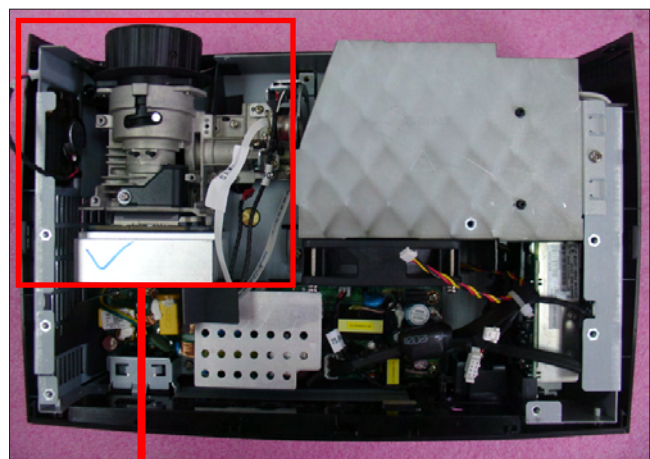
1. Unscrew 1 screw (as red circle).
2. Unfasten 2 tenons (as yellow square).
3. Remove the Front Cover Module.
4. Unfasten 2 tenons (as green square) to disassemble the IR Sensor Board

Note: - Take care of the tenons when you disassemble the unit.



2-11 Disassemble Engine Module

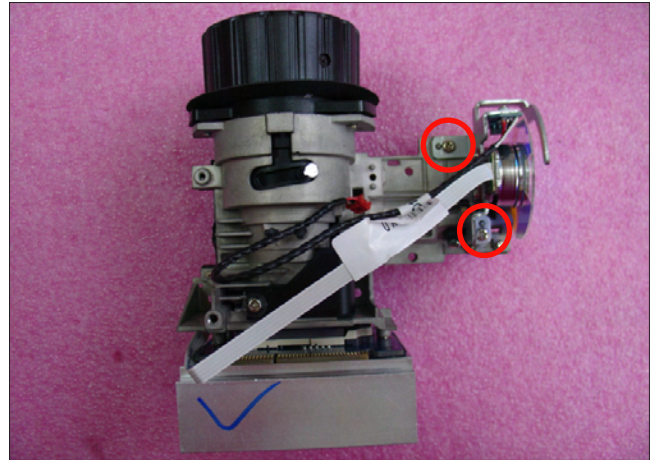
1. Unscrew 4 screws (as yellow circle) to disassemble the Engine Module.



2-12 Disassemble Color Wheel Module

1. Unscrew 2 screws (as red circle) to disassemble the Color Wheel Module.
2. Unscrew 1 screw (as blue circle) to disassemble the Photo Sensor Board from the Color Wheel Module.

Note: - Avoid touching the glass parts of color wheel.



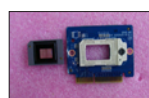
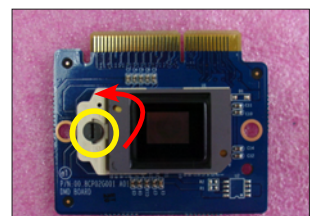
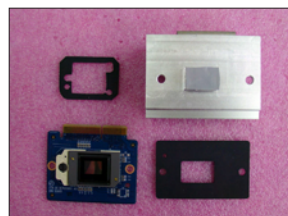
2-13 Disassemble DMD Chip and DMD Board

1. Unscrew 2 screws (as red circle) to disassemble the Heat Sink and DMD Module.
2. Counterclockwise rotate the screw (as yellow circle) to disassemble the DMD Board and DMD Chip.

Note: - Avoid touching the DMD Chip when you disassemble it.

- Found that the DMD Chip has scrapes or dirt use of a magnifying glass, you may use an electrostatic ion gun to clean it.

- Pay attention to the fixed position when assembling the DMD Chip.

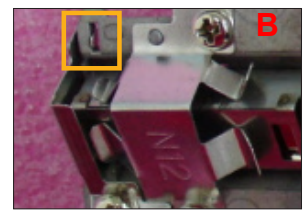
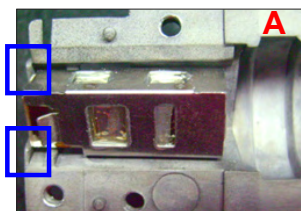
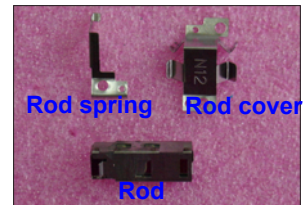
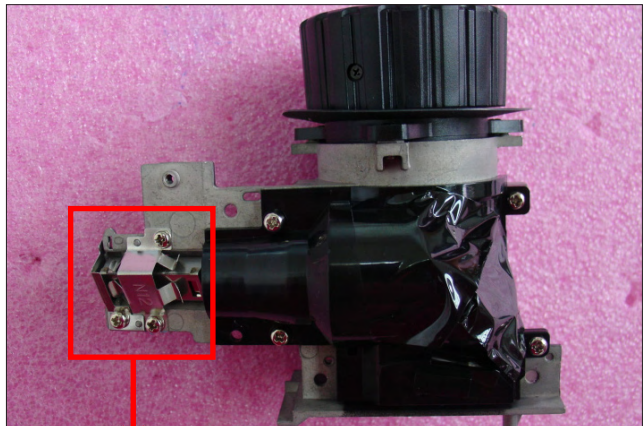


2-14 Disassemble Rod Module

1. Unscrew 2 screws (as green circle) to take off the Rod Spring.
2. Unscrew 1 screw (as yellow circle) to take off the Rod Cover.
3. Remove the Rod.

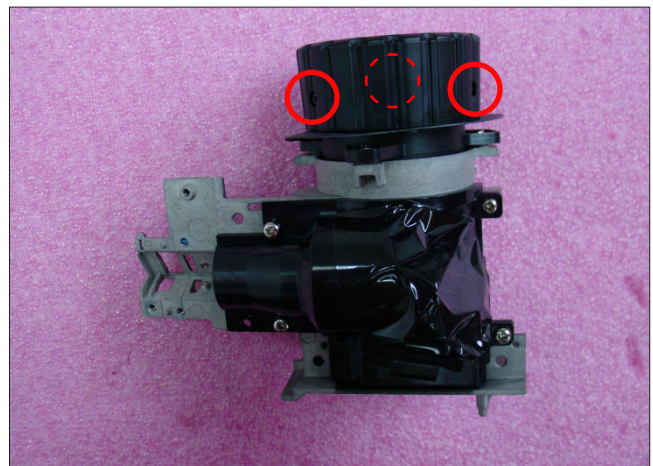
Note: - Avoid touching the Rod when you disassemble or assemble it.

- Please notice the Rod Module's direction when you assemble it (as picture A shown)
- Ensure left edge of Rod Module contact with the Engine base's blocks.
- Rod Spring must hook in the position as picture B shown.



2-15 Disassemble Focus Ring

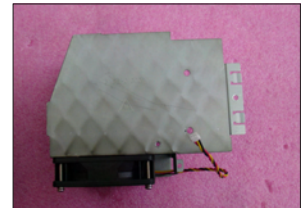
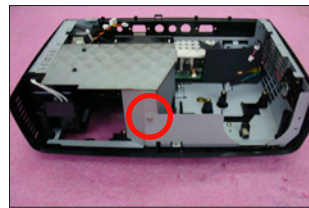
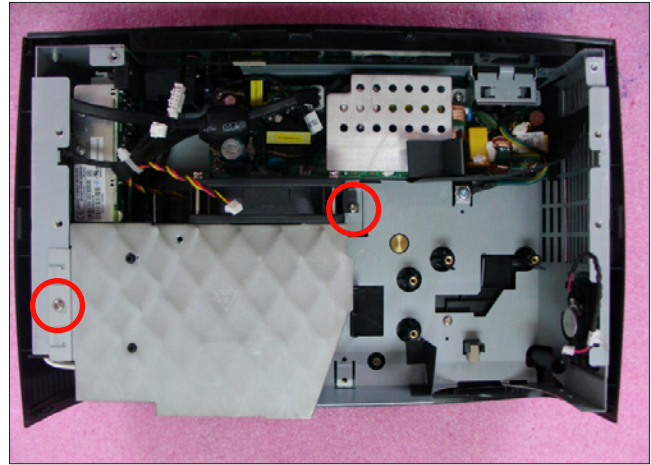
1. Unscrew 3 screws (as red circle) to disassemble the Focus Ring.



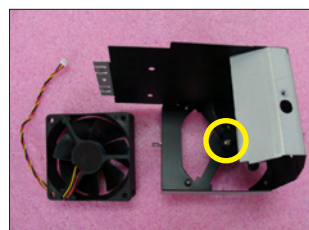
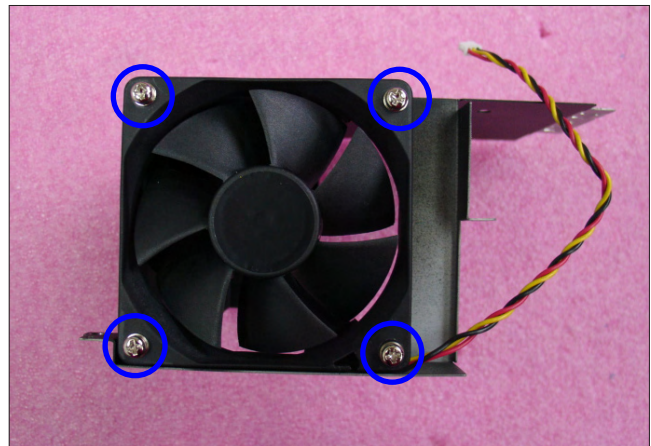
Focus Ring

2-16 Disassemble Fan Module

1. Unscrew 3 screws (as red circle) to disassemble the Fan Module.



2. Unscrew 4 screws (as blue circle) to separate Fan and Fan Shielding.
3. Unscrew 1 screw (as yellow circle) to disassemble the Fan Duct.



Fan and Fan Shielding



Fan Duct

Note: - Take the Fan Module as the right gesture.



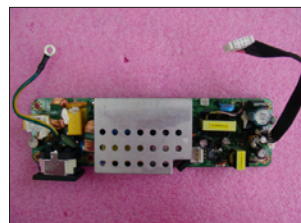
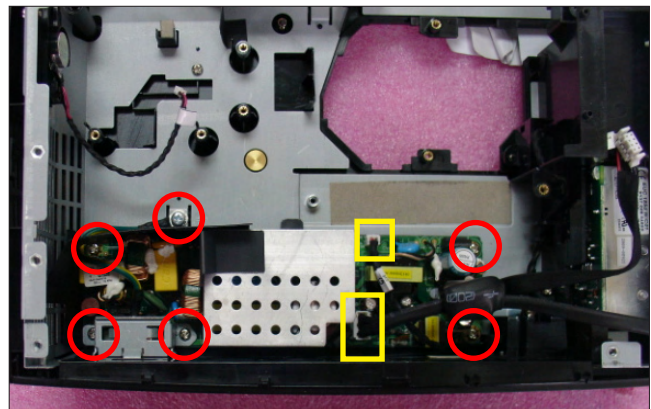
the right gesture



the wrong gesture

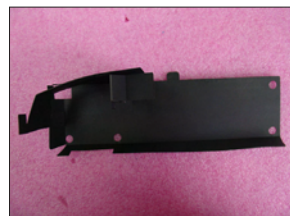
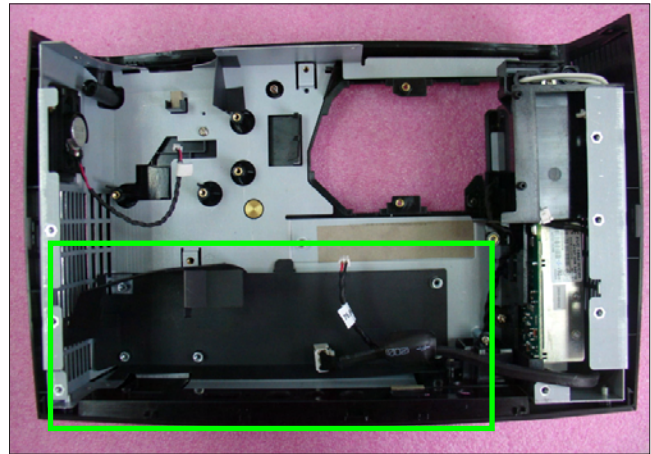
2-18 Disassemble LVPS Module

1. Unscrew 6 screws (as red circle).
2. Unplug 2 connectors (as yellow square).
3. Disassemble the LVPS Module and the AC Inlet Bracket.



AC Inlet Bracket

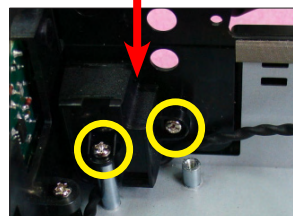
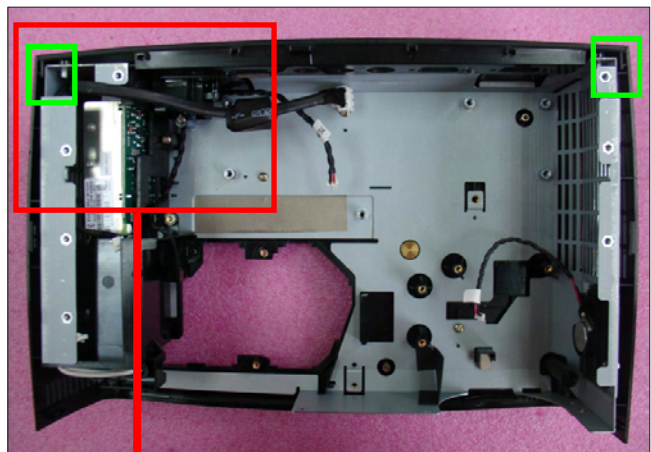
4. Tear off 1 mylar (as green square).



2-19 Disassemble IO Cover and Security Bar

1. Unscrew 2 screws (as yellow circle).
2. Unfasten 2 tenons (as green square).
3. Disassemble the IO Cover.
4. Unscrew 1 screw (as blue circle) to disassemble the Security Bar and Security Bar Cap from the IO Cover.

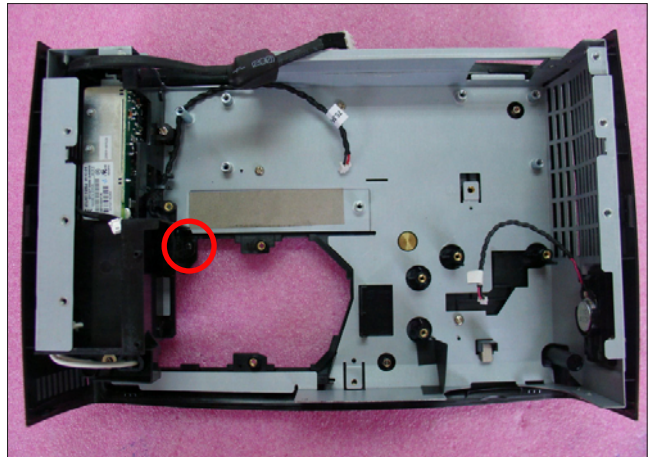
Note: - Take care of the tenons (as green square) when you disassemble the IO Cover.



2-20 Disassemble Interlock Switch

1. Unscrew 1 screw (as red circle) to disassemble the Interlock Switch.

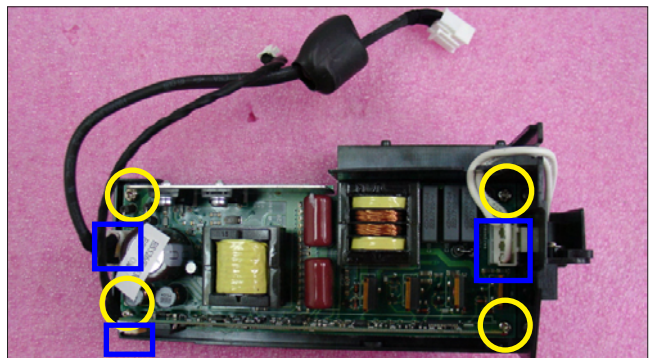
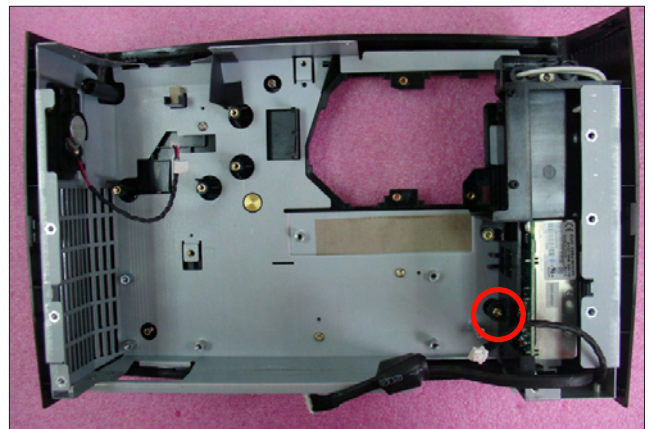
Note: Make sure the Interlock Switch cable be wedged fillister as the picture shown.



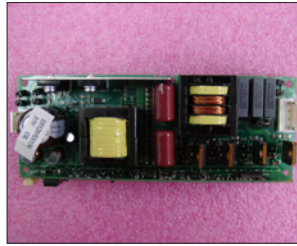
Interlock Switch

2-21 Disassemble Lamp Driver Module

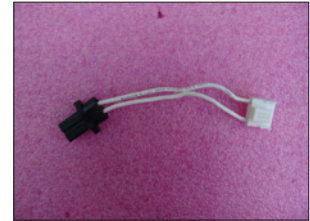
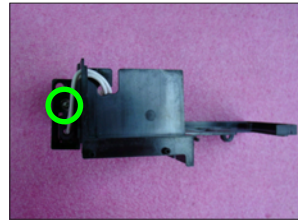
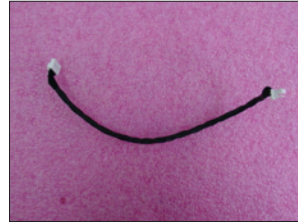
1. Unscrew 1 screw (as red circle) to remove the Lamp Driver Module.
2. Unscrew 4 screws (as yellow circle).
3. Unplug 3 connectors (as blue square).



4. Disassemble the Lamp Driver Module and Lamp Driver Holder.
5. Unscrew 1 screw (as green circle) to disassemble the cable from Lamp Driver Holder.



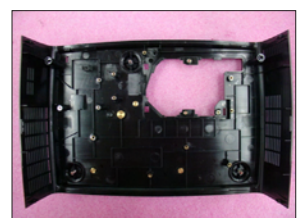
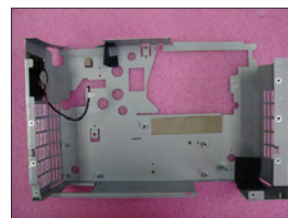
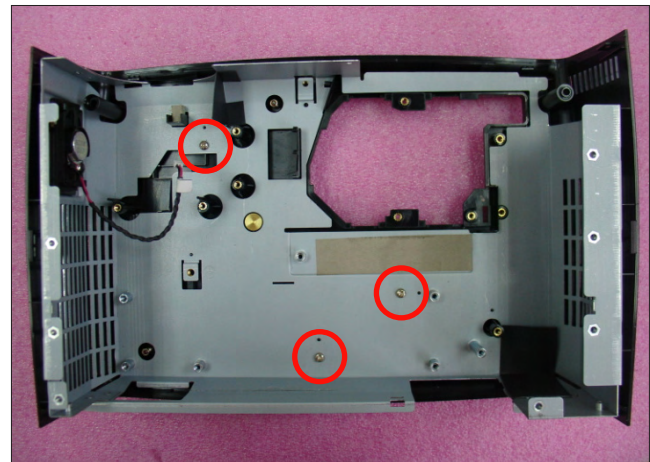
Lamp Driver Holder



Lamp to Lamp Driver cable

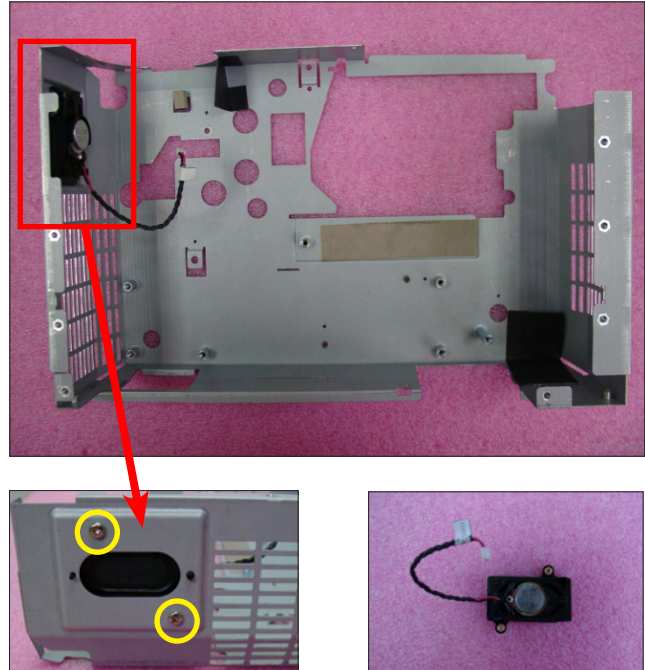
2-22 Disassemble Bottom Shielding

1. Unscrew 3 screws (as red circle) to disassemble the Bottom Shielding.



2-23 Disassemble Speaker (Not for ES526L/EX536L)

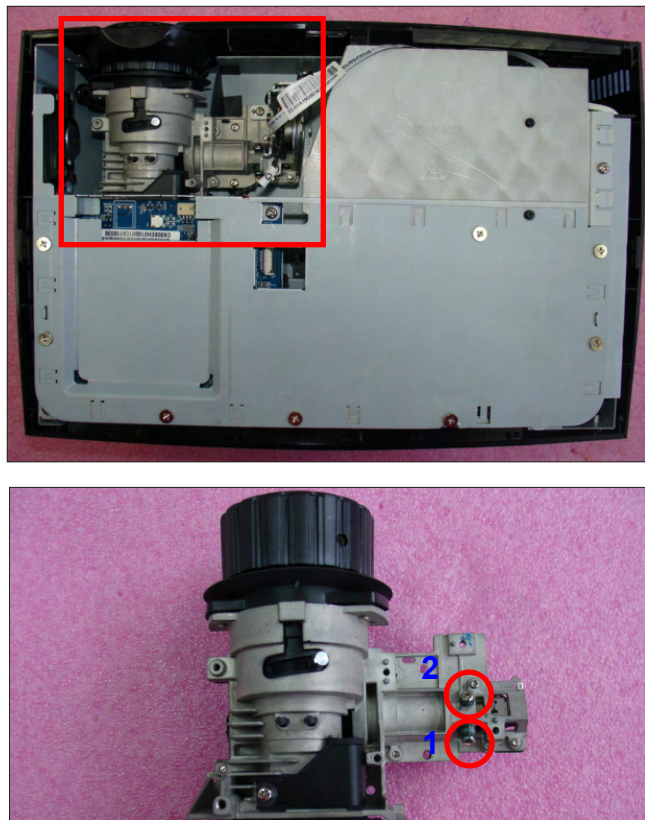
1. Unscrew 2 screws (as yellow circle) to disassemble the Speaker.



2-24 Rod Adjustment

1. Environment Adjustment
 - The distance between the engine and the screen is 2.4 M.
 - This process should be done at a dark environment (under 2 Lux).
2. Procedure Adjustment
 - Change the screen to "white screen".
 - Adjust the screws by using the rod on the engine module to readjust the image.

("screw 1" should be adjusted first, and then "screw 2". Adjust until the yellowish or bluish parts disappeared.)



3. Abnormal image inspection

- It should not have any abnormal color at the rim of the image by estimating through the eyes.

Note: - To avoid over adjusting the rod.

- After the operation, please use the glue to fix the screws.

2-25 Re-write Lamp Usage Hour

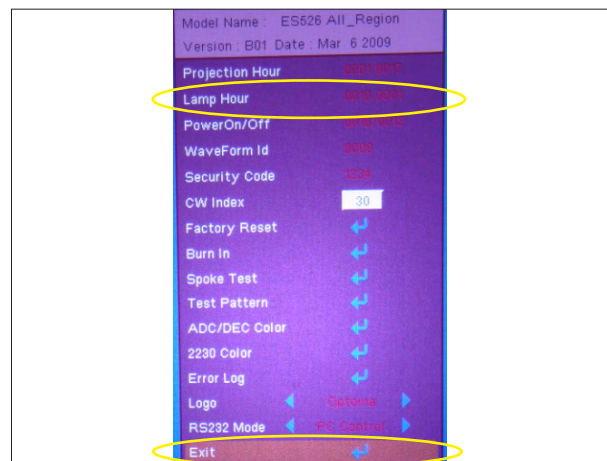
1. Get into service mode

- Press "Power", "Left", "Left" and "Menu" buttons sequentially to get into service mode.

2. Use "up" or "down" buttons to select "Exit", then use "left" or "right" buttons to re-write the lamp hour back to previous lamp usage hour.


















3. Press "Enter" to exit the service mode.

*Note: left key = decrease lamp hour
right key =increase lamp hour*



Troubleshooting

3-1 LED Lighting Message

Message	Power LED (Red / Green)	Temp LED (Red)	Lamp LED (Red)
Standby State (input power cord)	 (Red)		
Power on (warming)	Flashing (Green)		
Power on and Lamp lighting	 (Green)		
Power off (Cooling)	Flashing (Green)		
Error (Lamp failed)	Flashing (Red)		 (Red)
Error (Fan failed)	Flashing (Red)	Flashing (Red)	
Error (Over Temp.)	Flashing (Red)	 (Red)	
Burn in	Flashing (Green)		


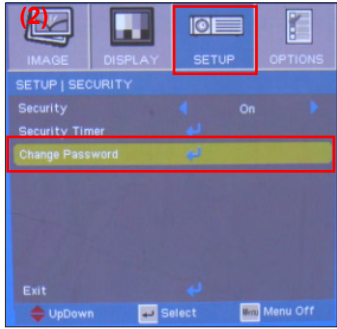
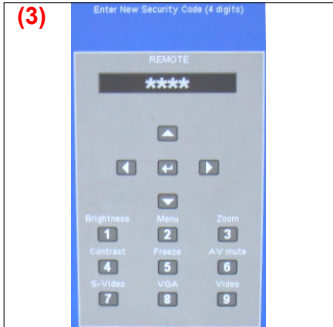
 Steady light  No light

3-2 Main Procedure

No	Symptom	Procedure
1	No Power	<ul style="list-style-type: none"> - Ensure the Power Cord and AC Power Outlet are securely connected - Check Lamp Cover , Interrupt Switch - Ensure all connectors are securely connected and aren't broken - Check LVPS - Check Lamp Driver - Check Main Board
2	Auto Shut Down	<ul style="list-style-type: none"> - Check LED Status <ul style="list-style-type: none"> a. Lamp Fail: Power LED (flashes red), Lamp LED (lights red) <ul style="list-style-type: none"> - Check Lamp - Check Lamp Driver - Check Main Board b. Over Temp.: Power LED (flashes red), Temp LED (lights red) <ul style="list-style-type: none"> - Check Fan - Check Main Board c. Fan Fail: Power LED (flashes red), Temp LED (Flashes red) <ul style="list-style-type: none"> - Check Fan - Check Main Board
3	No Light On	<ul style="list-style-type: none"> - Ensure all connectors are securely connected and aren't broken - Check Lamp Module - Check Lamp Driver - Check LVPS - Check Main Board - Check Color Wheel - Check Photo Sensor Board

No	Symptom	Procedure
4	No Image	<ul style="list-style-type: none"> - Ensure the Signal Cable and Source work (If you connect multiple sources at the same time, use the “Source” button switch) - Ensure all connectors are securely connected and aren’t broken - Check Main Board - Check DMD Board - Check DMD Chip - Check Color Wheel - Check Engine Module
5	Mechanical Noise	<ul style="list-style-type: none"> - Check Color Wheel - Check Fan Module
6	Line Bar/Line Defect	<ul style="list-style-type: none"> - Check if the Main Board and the DMD Board are assembled properly - Check Main Board - Check DMD Board - Check DMD Chip
7	Image Flicker	<ul style="list-style-type: none"> - Do “Reset (All data)” of the OSD Menu - Ensure that the signal cables and source are work as well - Check Lamp Driver and waveform - Check Lamp Module - Check Color Wheel - Check Photo Sensor and clean Photo Sensor - Check DMD Board - Check Main Board
8	Color Abnormal	<ul style="list-style-type: none"> - Do “Reset (All data)” of the OSD Menu - Adjust Color Wheel Index - Check Main Board - Check DMD Board - Check Color Wheel

No	Symptom	Procedure
9	Poor Uniformity/ Shadow	<ul style="list-style-type: none"> - Ensure the projection screen without dirt - Ensure the projection lens is clean - Ensure the Brightness is within spec. - Check rod alignment - Check Engine Module
10	Dead Pixel/Dust (Out of spec.)	<ul style="list-style-type: none"> - Ensure the projection screen without dirt - Ensure the projection lens is clean - Clean DMD Chip and Engine Module - Check DMD Chip - Check Engine Module
11	Garbage Image	<ul style="list-style-type: none"> - Ensure that the signal cables and source work as well - Check Main Board - Check DMD Board
12	Remote Control/ Control Panel Failed	<ul style="list-style-type: none"> - Remote Control <ul style="list-style-type: none"> a. Check Battery b. Check Remote Controller c. Check IR Sensor Board d. Check Main Board - Control Panel <ul style="list-style-type: none"> a. Check FPC b. Check Keypad c. Check Main Board
13	Function Abnormal	<ul style="list-style-type: none"> - Do "Reset (All data)" of the OSD Menu - Check Main Board - Check DMD Board
14	Audio Abnormal	<ul style="list-style-type: none"> - Ensure that the signal cables and source are work as well - Ensure that your Projector is not in "Mute" mode - Check the interior Speaker of the projector - Check the exterior Speaker that you are using - Check Main Board

No	Symptom	Procedure
15	Forgetting Password (administrator Password)	<p>- If you forget the Password, please do the following steps to get the Universal Password:</p> <ol style="list-style-type: none"> (1) When you turn on the projector, the message "Enter Security Code" appears. Please Input the "Current Security Code 8642" by Remote Control, then press "Enter". (2) Press "Menu" button, select "Setup", "Change Password", then press "Enter" button. The message "Enter Security Code" appears again, repeat step (1). (3) The message "Enter New Security Code" appears. Input a 4-digits code (letters and/or numbers) that you define. (4) To confirm, key in the password again. The "Security Code change successfully" appear on the screen. <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>(1)</p>  </div> <div style="text-align: center;"> <p>(2)</p>  </div> </div> <div style="text-align: center; margin-top: 20px;"> <p>(3)</p>  </div>

Function Test & Alignment Procedure

4-1 Test Equipment Needed

- IBM PC with SVGA/XGA resolution
- DVD player with Multi-system, equipped "Component", "S-Video", "Composite" and "HDMI".
- HDTV Source (480P, 720P, 1080i, 1080P)
- Minolta CL-100
- Quantum Data 802B or CHROMA2327 (Color Video Signal & Pattern Generator)

4-2 Service Mode

1. Turn on the projector
2. Do the following actions sequentially to get into service mode
 - (1) Press "Power", "Left", "Left" and "Menu" buttons sequentially on remote controller.
 - (2) Service Mode will be shown.
 - (3) Choose "Exit" to leave the Service Mode after confirming the configuration.

4-3 OSD Reset

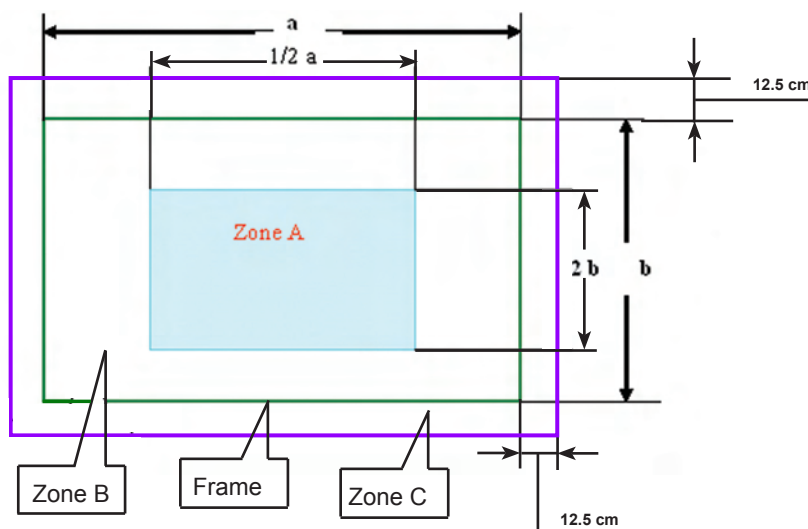
1. After final QC step, we have to erase all saved change again and restore the OSD default setting. The following actions will allow you to erase all end-users' settings and restore the default setting:
 - (1) Please get into OSD menu.
 - (2) To execute "Reset" function.

4-4 Test Condition

4-4-1 Normal Test Condition

- Circumstance brightness: Dark room less than 10.0 lux.
- Inspection distance: 1.8m~2.5m functional inspection.
- Screen size: 60 inches diagonal.

Screen Defects (While replacing DMD Chip, DMD Board , Main Board)



< Figure: Zone A, Zone B, Zone C & Frame (as green line) Definition, Active area=Zone A + Zone B >

Defect specification table

For EX536/EX536L

Order	Symptom	Pattern	Criteria
1	Bright pixel (dots)	Gray 10 pattern	$A+B=0$
2	Dark pixel(dots)	White pattern	$A+B\leq 4$
3	Unstable pixel (dots)	Any pattern	$A+B=0$
4	Adjacent dark pixel (dots)	Any pattern	$A+B=0$

Order	Symptom	Pattern	Criteria
5	Bright blemish (Dirty)	Gray 10 pattern	$A+B \leq 2$ (diameter <1/2 inch)
6	Dark blemish (Dirty)	Blue 60 pattern	$A+B \leq 2$ (diameter <1/2 inch)
7	Bright dot on frame	Gray 10 pattern	≤ 1

For ES526/CB2800/ES526L/DS316L

Order	Symptom	Pattern	Criteria
1	Bright pixel (dots)	Any pattern	$A+B=0$
2	Dark pixel(dots)	Any pattern	$A+B \leq 3$
3	Unstable pixel (dots)	Any pattern	$A+B=0$
4	Adjacent dark pixel (dots)	Any pattern	$A+B=0$
5	Bright blemish (Dirty)	Gray 10 pattern	$A+B \leq 4$ (diameter <1 inch)
6	Dark blemish (Dirty)	Blue 60 pattern	$A+B \leq 4$ (diameter <1 inch)
7	Bright dot on frame	Any pattern	≤ 1

For EX531

Order	Symptom	Pattern	Criteria
1	Bright pixel (dots)	Black pattern	$A+B=0$
2	Dark pixel(dots)	White pattern	$A+B \leq 4$

Order	Symptom	Pattern	Criteria
3	Unstable pixel (dots)	Any pattern	A+B=0
4	Adjacent dark pixel (dots)	Any pattern	A+B=0
5	Bright blemish (Dirty)	Gray 10 pattern	A+B≤4 (diameter <1 inch)
6	Dark blemish (Dirty)	Blue 60 pattern	A+B≤4 (diameter <1 inch)
7	Bright dot on frame	Black pattern	≤1

4-4-2 Burn-In Test

- Temperature: 15°C~35°C
- Circumstance brightness: Normal environment
- Screen size: No concern
- Display mode: ECO mode

After repairing each unit, it should be Burn-in (refer to the below table).

Symptom	Burn-in Time
Normal repair	2 hours
NFF	4 hours
Auto shutdown	6 hours

- Get into Burn-In Mode

** Cycle setting is based on the defect symptoms. ie: If it is NFF, the burn-in time is 4 hours. You have to set the lamp on for 50 min. and lamp off for 10 min for 4 cycles.*

Note: Please make sure that the hot exhaust airflows from projectors can flow towards the aisle.

Press power → left → left → menu on remote controller	
Choose Burn In > enter	
Lamp On (Min)	Press right key to adjust the time (50)
Lamp Off (Min)	Press right key to adjust the time (10)
Set Burning cycle	Press right key to adjust the cycle
After setting up the time, choose "Enter to Burn In" and press "enter" button.	

4-5 Test Inspection Procedure

Update	Change parts				
	Main Board	Firmware	Color Wheel	Lamp Module	Engine Module
Version Update	v	v			
Color Wheel Index	v		v		
Reset lamp hour				v	
OSD Reset	v	v			
EDID	v				
Re-write Lamp Hour Usage	v				
Rod adjustment					v

Note: - If Color appears abnormal after changing Main Board Module, please do Color Wheel index adjustment.

- After changing parts, check the information above table.

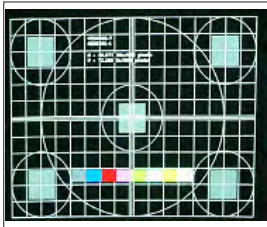

4-6 PC MODE

Note: - When getting into function test, adjust the zoom ring and focus ring to guarantee the image maximum and clearest, then start to test.


- Test signal: analog 800 x 600 @60Hz (for ES526/CB2800/ES526L/DS316L)
analog 1024 x 768 @60Hz (for EX536/EX531/EX536L)*
- We take ES526 for example here.*
- Connect VGA IN port of Projector with VGA port of Chroma and connect VGA Out port of Projector with VGA port of Monitor by VGA cable, check if the Projected image and the LCD image are the same.*

**Note: VGA1-IN and VGA2-IN/SCART ports of Projector (for EX536/EX531/EX536L) all need to do the function test.*

1. Frequency and tracking boundary

Procedure	<ul style="list-style-type: none"> - Test equipment: video generator - Test signal: analog 800 x 600 @60Hz - Test pattern: general-1 or master - Check and see if the image sharpness is well performed. - If not, re-adjust by the following steps: <ul style="list-style-type: none"> (1) Select "Frequency" function to adjust the total pixel number of pixel clock in one line period. (2) Select "Tracking" function and use right or left arrow key to adjust the value to minimize video flicker. - Adjust Resync or Frequency/Tracking/H Image Shift/V Image Shift to the inner screen. 	 <p>General-1</p>
Inspection item	<ul style="list-style-type: none"> - Eliminate visual wavy noise by Rsync, Frequency or Tracking selection. - Check if there is noise on the screen. - Horizontal and vertical position of the video should be adjustable to the screen frame. 	 <p>Master</p>
Criteria	<ul style="list-style-type: none"> - If there is noise on the screen, the product is considered as failure product. - If there is noise on the screen, use auto or manual "frequency" function or "tracking" function to adjust the screen. - The PC mode functionally sure be workable include support format with frequency and auto detected functional will be workable. 	

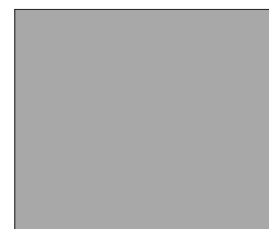
2. Light Leak

Procedure	<ul style="list-style-type: none"> - Test equipment: video generator - Test signal: analog 800 x 600 @60Hz - Test pattern: Black pattern - Check if the light leaks. * Light leak on reflective edge, eye-catcher, bond wires and exposed metal. 	 <p>Full black</p>
Inspection item	<ul style="list-style-type: none"> - Light leak check. 	
Criteria	<ul style="list-style-type: none"> - The pattern cannot accept the color level of the 	

leakage is brighter than full black pattern.

- Using Black pattern, the light leak is acceptable when it appears out of the zone C.
- The light leak appears in the zone C within the frame of any pattern, please use gray 10 pattern to judge it.
- The pattern cannot accept the color level of the ineffective leakage is brighter than gray 10 pattern.

Note: The defect criteria follows TI specification.



Gray 10

3. Dead Pixel (Bright pixel)

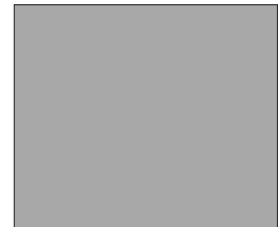
Procedure	<ul style="list-style-type: none">- Test equipment: video generator- Test signal: analog 800 x 600 @60Hz- Test pattern: Any pattern
Inspection item	<ul style="list-style-type: none">- Bright pixel check.
Criteria	<ul style="list-style-type: none">- Bright pixel is unacceptable when it appears on zone A and zone B.- It is acceptable when it has 1 bright pixel on the frame of any pattern.- Ref. Defect specification table <p>Note: The defect criteria follows TI specification.</p>

4. Dead Pixel (Dark pixel)

Procedure	<ul style="list-style-type: none">- Test equipment: video generator- Test signal: analog 800 x 600 @60Hz- Test pattern: Any pattern
Inspection item	<ul style="list-style-type: none">- Dead pixels check.- Any pattern- Adjacent dark pixel.
Criteria	<ul style="list-style-type: none">- It is acceptable when it has 3 dead pixels on any pattern, the picture frame should not appear yellow, shadow, light blue, and other nonperforming.- Adjacent pixel with each other is unacceptable.- Ref. Defect specification table <p>Note: The defect criteria follows TI specification.</p>

5. Blemish (Bright)

Procedure	<ul style="list-style-type: none">- Test equipment: video generator- Test signal: analog 800 x 600 @60Hz- Test pattern: Gray 10
Inspection item	<ul style="list-style-type: none">- Bright blemish check. (dirty)
Criteria	<ul style="list-style-type: none">- It is acceptable when it has 4 bright blemishes under gray 10 pattern.- Ref. Defect specification table <p>Note: The defect criteria follows TI specification.</p>



Gray 10

6. Blemish (Dark)

Procedure	<ul style="list-style-type: none">- Test equipment: video generator- Test signal: analog 800 x 600 @60Hz- Test pattern: Blue 60
Inspection item	<ul style="list-style-type: none">- Dark blemish check. (dirty)
Criteria	<ul style="list-style-type: none">- It is acceptable when it has 4 bright blemishes under Blue 60 pattern.- Ref. Defect specification table <p>Note: The defect criteria follows TI specification.</p>



Blue 60

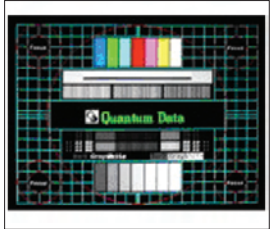

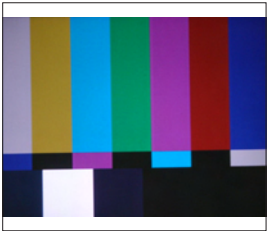
7. Focus test

Procedure	<ul style="list-style-type: none">- Test equipment: video generator- Test signal: analog 800 x 600 @60Hz- Test pattern: Full screen
Inspection item	<ul style="list-style-type: none">- Focus check
Criteria	<ul style="list-style-type: none">- From screen 2.4 M via visual to check the focus, look at the entire screen, focus shall be clear, crisp, and sharp over the entire surface of the display pattern. (Blur word on one of the corner after adjustment is acceptable. However, the word should at least be recognizable.)




Full screen

8. Color performance

Procedure	<ul style="list-style-type: none"> - Test equipment: video generator. - Test signal: 480p, 720p, 1080p - Test pattern: Master, 64 gray RGBW or SMPTE bar * Please refer to 4-2 to get into service mode. Use 720p & 1080p signal, master pattern to do HDTV test. Color cannot discolor to purple and blue. 	
Inspection item	<ul style="list-style-type: none"> - Check if each color level is well-functioned. - Color saturation 	<i>Master</i>
Criteria	<ul style="list-style-type: none"> - Screen appears normal. It should not have any abnormal condition, such as lines appear on the screen and so on. - Color appears normal. - It is unacceptable to have few lines flashing. - RGBW should all appear normal on the screen and sort from R-G-B-W. - Color levels should be sufficient and normal. (The unidentified color levels on both left and right sides should not over 8 color levels.) - Gray level should not have abnormal color or heavy lines. - If color appears abnormal, please get into service mode to do Color Wheel Index adjustment. - The PC mode functionally sure be workable include support format with frequency and auto detected functional will be workable. 	 <i>64 gray RGBW</i>  <i>SMPTEbar</i>

4-7 Video Performance

1. CVBS

Procedure	<ul style="list-style-type: none"> - Test equipment: DVD player - Test signal: CVBS 	
Inspection item	- Video performance test	
Inspection Distance	- 1.8 M ~2.5 M	
Criteria	- Check any abnormal color, line distortion or any noise on the screen.	

Motion video

- Check the sound from speakers.
- Check if "freeze" and "mute" are normal.
- Press "V Keystone" on remote controller, check if keystone function is normal.

2. S-Video (not for CB2800)

Procedure	<ul style="list-style-type: none"> - Test equipment: DVD player - Test signal: S-Video
Inspection item	- Video performance test
Inspection Distance	- 1.8 M ~2.5 M
Criteria	<ul style="list-style-type: none"> - Check any abnormal color, line distortion or any noise on the screen. - Check the sound from speakers. - Check if "freeze" and "mute" are normal. - Press "V Keystone" on remote controller, check if keystone function is normal.

3. HDTV/ Component

Procedure	<ul style="list-style-type: none"> - Test equipment: DVD player - Test signal: Ycbcr/YPbPr
Inspection item	- HDTV performance test
Inspection Distance	- 1.8 M ~2.5 M
Criteria	<ul style="list-style-type: none"> - Check any abnormal color, line distortion or any noise on the screen. - Check the sound from speakers. - Check if "freeze" is normal.

4. Audio Test (not for CB2800/ES526L/EX536L)

Procedure	<ul style="list-style-type: none"> - Test equipment: DVD Player - Test signal: CVBS
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Inspection item	- Audio performance test
Inspection Distance	- 1.8 M ~2.5 M
Criteria	<ul style="list-style-type: none"> - Check the sound from speakers - Plug Audio cable into Audio In port, check if "Volume" is normal. - Plug Audio cable into Audio Out port, check if the out board speaker's "Volume" is normal. - Adjust the volume to maximum by using the remote controller. - Check the sound from speakers. - Check if the "mute" is normal.

4-8 Optical Performance Measure

Inspection Condition
<ul style="list-style-type: none"> - Environment luminance: 2 Lux - Product must be warmed up for 3 minutes - Distances from the screen: 2.4 M - Screen Size: 60 inches diagonal

1. Test equipment

Procedure	<ul style="list-style-type: none"> - Connect VGA IN port of ES526/CB2800/ES526L (VGA1-IN/SCART port of EX536/EX531/EX536L) with VGA port of Chroma by VGA cable, press "Menu" button, get into OSD mode, the settings are as below: - "Display mode" is "Presentation", "Brightness" is "50", "Contrast" is "60", and the "Format" is "4:3". - Please do the Optical Performance Measure.
-----------	--

2. Brightness

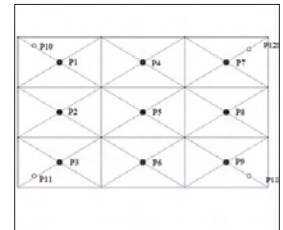
Procedure	<ul style="list-style-type: none"> - Full white pattern - Use CL100 to measure brightness values of P1~P9.
-----------	--

- Follow the brightness formula to calculate brightness values.

☀ Brightness Formula

$$\text{Avg. (P1~P9)} \times 1.1\text{m}^2$$

- 1000 ANSI lumen



Full white pattern

Criteria

3. Full On/Full Off Contrast

Procedure

- Full white pattern & full black pattern
- Use CL100 to measure brightness values of full white pattern P5 & full black pattern B5
- Follow Contrast formula to calculate contrast values.

☀ Contrast Formula

$$P5/B5$$

Note: P5=center of white image

B5 = Lux of center in full black pattern.



Full black pattern

Criteria

- 1600:1

4. Uniformity

Procedure

- Full white pattern
- Use CL100 to measure brightness values of P1~P9 (see image: full white).
- Follow the Uniformity formula to calculate average values.

☀ Uniformity Formula

$$\text{JBMA Uniformity} = \text{Avg. (P1, P3, P7, P9)} / P5 \times 100\%$$

Criteria

- 70%

4-9 Others

1. Function Inspection

General	- All OSD functions must be checked for functionality. When OSD menu is displayed, there shall be no visible peaking, ringing, streaking, or smearing artifacts on the screen.
Factory Default	- The factory settings (with appropriate centering, size, geometry distortion, etc.) shall be displayed upon "Recall" is selected from OSD.
Display Size	- All preset modes shall expand to full screen size using OSD Horizontal and Vertical Size controls.
Display Data Channel (DDC)	- The purpose of the DDC test is to verify the DDC1/DDC2B operation of the projector and to verify Plug & Play function.
Acoustic	- High pitch sound from cooling fan and color wheel is unacceptable.

2. Check points for exterior and print pattern

Check item	Check point
Text & Pattern	Missing letters & pattern or blurry prints are unacceptable.
Exterior	Dirt, scrape, water ripples and uneven color are unacceptable.
Focus ring	Focus ring is functioning smoothly.
Logo	Missing logo, missing prints and blurry prints are unacceptable
Screw	All screws should be fixed and in right type.
Pedestal	Well-functioned
Lamp Cover	It should be locked in the correct place.
Plastic Parts	All plastic parts can not be broken and damaged.
Safety or warning label	All safety and warning labels should be visible, including all contents.
Connector	All interface connectors should be complete and workable.

Firmware Upgrade

Section 1: System Firmware Upgrade

5-1-1 Equipment Needed

Software: (DDP 2431)

- DLP Composer Lite 7.1
- Firmware
- Library file (Library v7.1 0330)

Hardware:

- Projector
- Power cord: 42.50115G001
- RS232 cable: 42.83618G001
- PC or Laptop

Note: The FW upgrade procedure for EX536/ES526/EX531/CB2800/ES526L/EX536L/DS316L is the same, we take ES526 as an example here.



5-1-2 DLP Composer Lite Setup Procedure

1. Choose "DLP Composer Lite V7.1 Setup" Program.

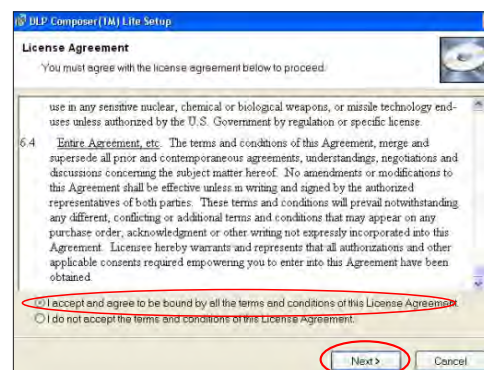


2. Click "Next".

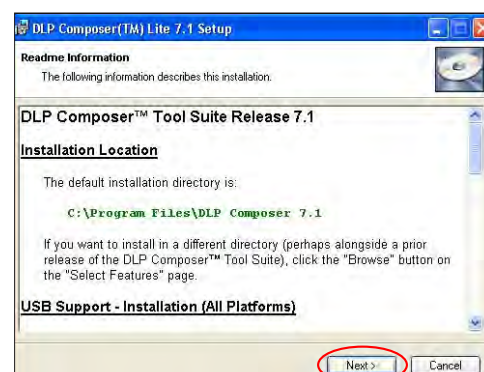


3. Read "License Agreement".

- Choose "I accept and agree to be bound by all the terms and conditions of this License Agreement".
- Click "Next".



4. Click "Next".

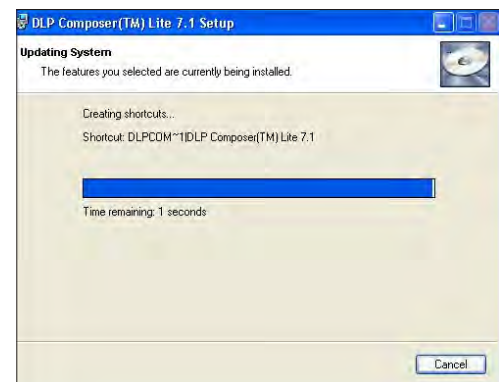
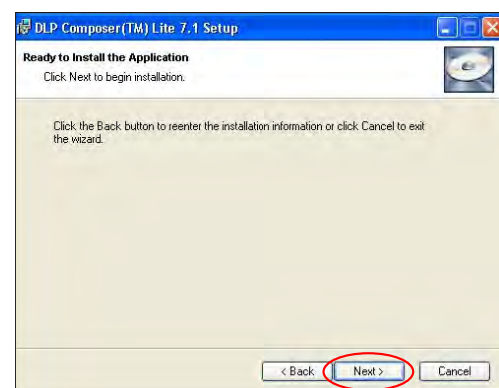
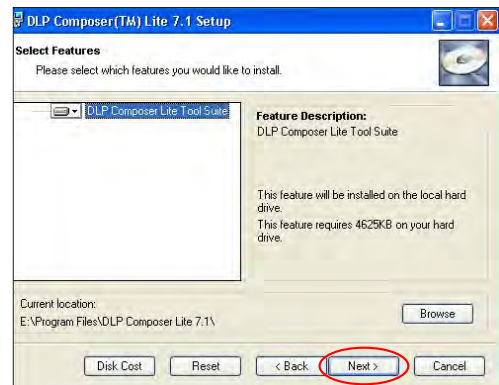


5. Click "Next".

6. Click "Next".

7. The program is executing "installing" status.

8. Click "Finish".



5-1-3 Firmware Upgrade Procedure

1. Set-up

- Hold on "POWER" button and plug in the power cord, the power LED will start to flash until the LED status goes to steady orange, the Temp LED and Lamp LED will light on red.
- Loosen the "POWER" button.
- Connect projector with PC by RS232 cable.

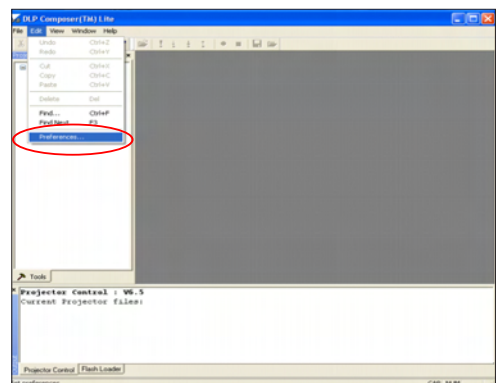
Note: The system fan and the lamp will not operated.



2. Execute the "DLP Composer™ Lite 7.1" file.

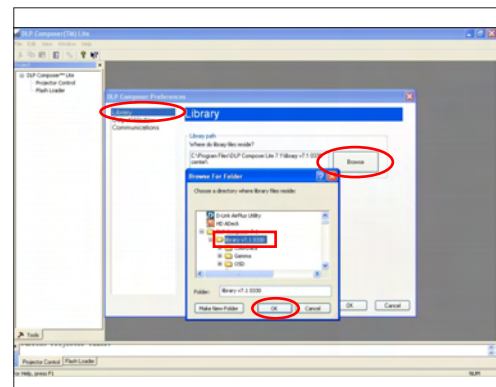


3. Click "Edit" and "Perferences".



4. Click "Library".

- Click the "Browse" and navigate to the directory where you put the DLP Composer installation files in.
- Click "Library v7.1 0330" folder.
- Click "OK".



5. Click "Communications".

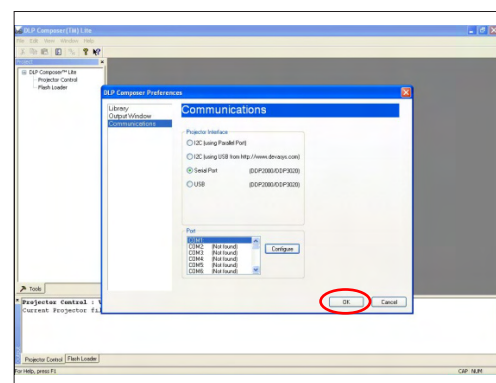
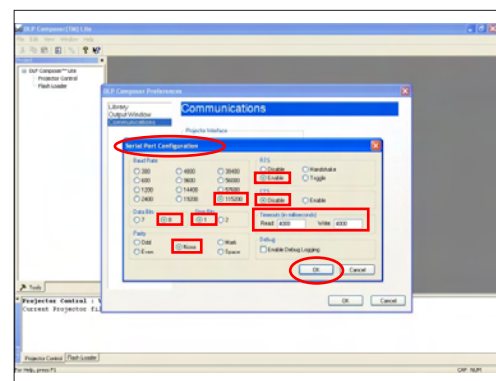
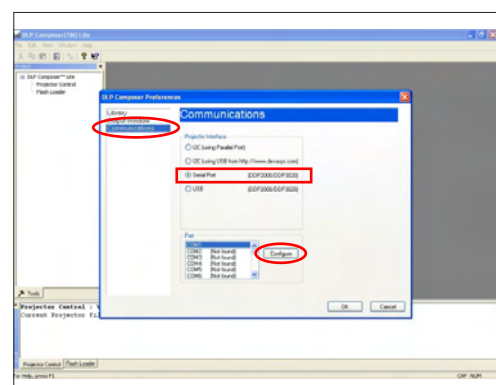
- Select "Serial Port", then click "Configure".

6. "Serial Port Configuration" picture will appear on the screen.

- Make sure the settings are as below:

- (1) In "Baud Rate" item, select "115200".
- (2) In "Data Bits" item, select "8".
- (3) In "Stop Bits" item, select "1".
- (4) In "Parity" item, select "None".
- (5) In "RTS" item, select "Enable".
- (6) In "CTS" item, select "Disable".
- (7) Key in "4000" into "Read" and "Write" items of "Timeouts (in milliseconds)".

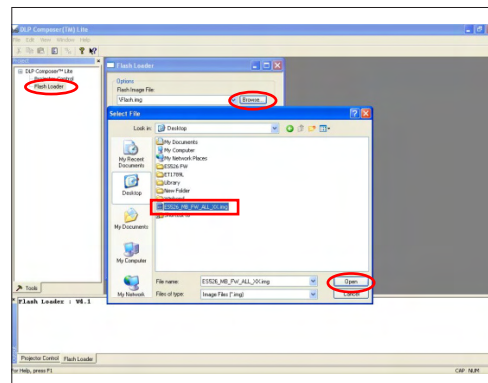
- Click "OK".



7. Click "OK".

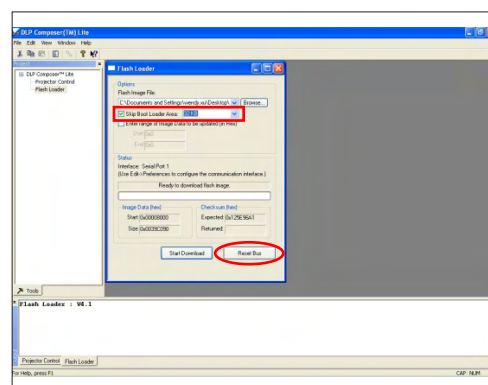
8. Choose "Flash Loader".

- Click "Browse" to search the firmware file (*.img).
- Click "Open".



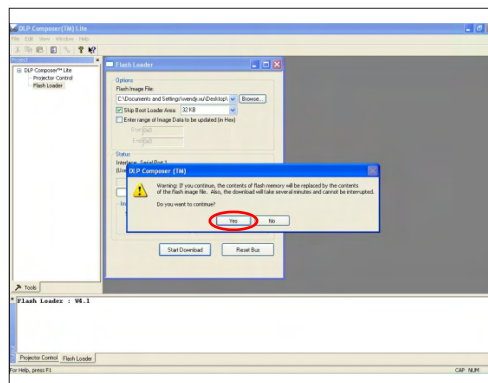
9. Select "Skip Boot Loader Area".
(select "32KB").

- Click "Reset Bus" to erase the flash memory.

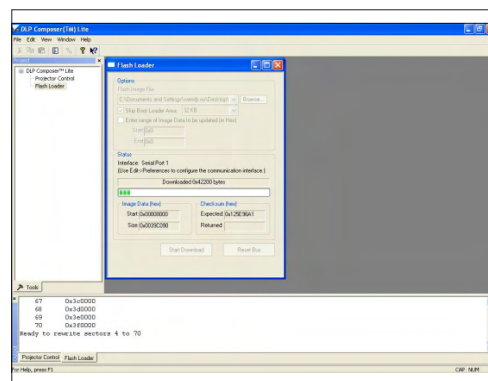


10. If the FW is ready, click "Start Download" to execute the firmware upgrade.

- Click "Yes".



11. Proceeding Picture.



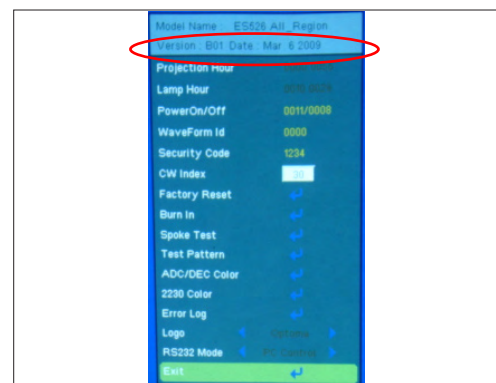
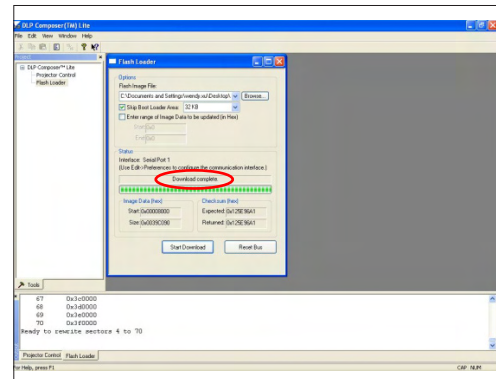
12. It takes about 8 minutes, the firmware upgrade process is finished, "Download completed" will appear on the screen.

- Unplug RS232 cable and power cord.

13. Check FW version.

- Re-plug in power cable, then restart the unit and get into the Service mode to check the firmware version.

(To get into Service mode, please press "Power", "Left", "Left" and "Menu" buttons sequentially.)



Section 2: 8051 Firmware Upgrade Procedure

5-2-1 Equipment Needed

Software: (DDP 2431- USB)

- Setup _NLINK_en
- Manley USB Driver_NLINK
- xxx_8051_xx.hex

Hardware:

- Projector
- Power cord: 42.50115G001
- NLINK Fixture: SP.8CS02G001(include Mini USB cable)
- PC or Laptop

Note: The 8051 FW upgrade procedure for EX536/ES526/CB2800/EX531/ES526L/EX536L/DS316L is the same, we take ES526 as an example here.



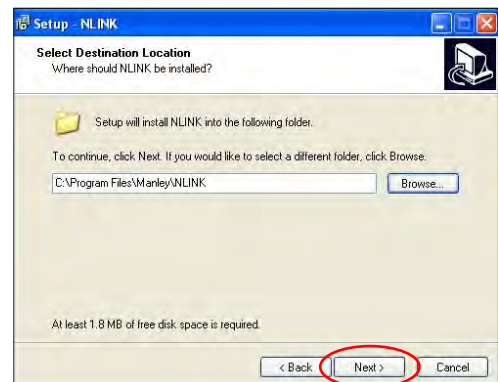
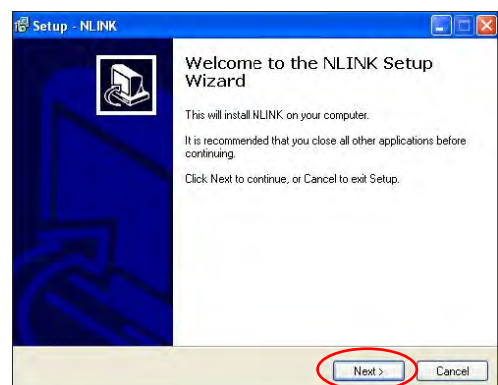
5-2-2 NLINK Setup Procedure

1. Choose "setup_NLINK_en.exe" Program.

2. Click "Next".

3. Click "Next".

4. Click "Next".



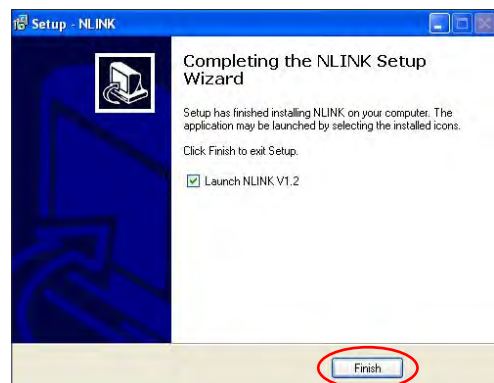
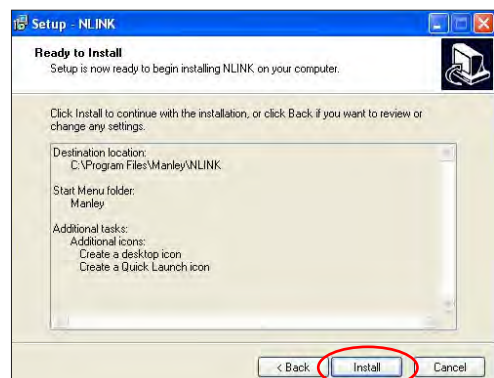
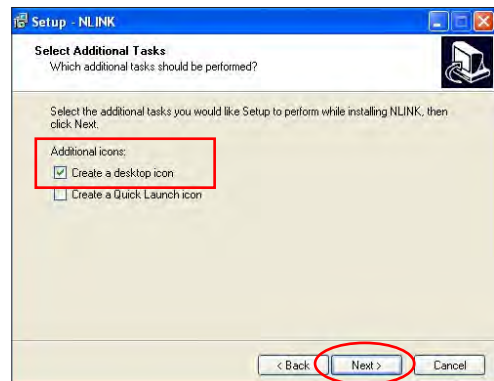
5. Click "Next".

- Select the additional task that you may create a desktop icon.

6. Click "Install" to begin installing NLINK Procedure.

7. Click "Finish".

- Complete the NLINK setup.



5-2-3 USB Driver Upgrade Procedure

1. Set-up

- Plug in the power cord, the power LED will light on red.
- Connect VGA-1 in Port of projector with NLINK Fixture .
- Connect NLINK Fixture with PC by USB cable.

Note: Please connect VGA1 IN Port of EX536/ EX531 with NLINK Fixture.

2. Execute Program

(1) "Found New Hardware Wizard" picture will appear on the screen.

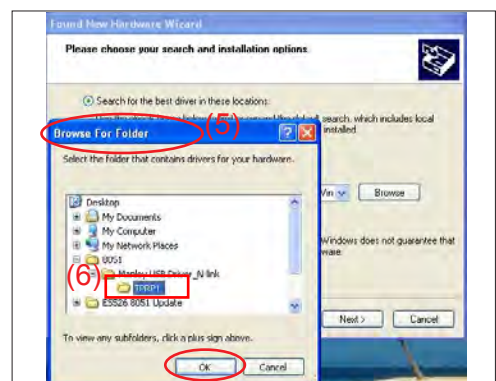
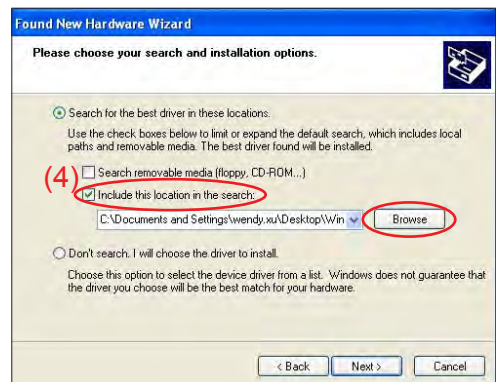
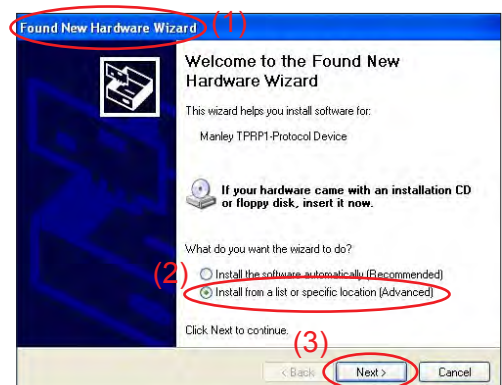
(2) Select "Install from a list or specific location (Advanced)".

(3) Then click "Next".

(4) Select "Include this location in the search", then click "Browse".

(5) "Browse For Folder" picture will appear on the screen.

(6) Select "TPRP1" folder in the "Manley USB Driver_N-Link" folder, then click "OK".



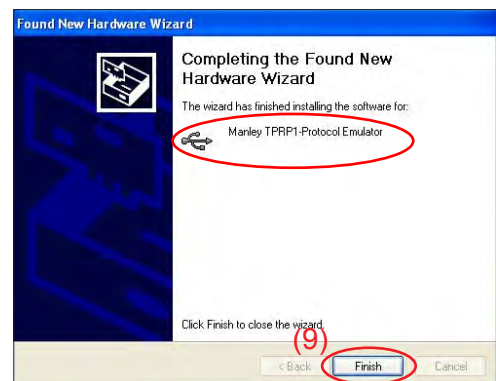
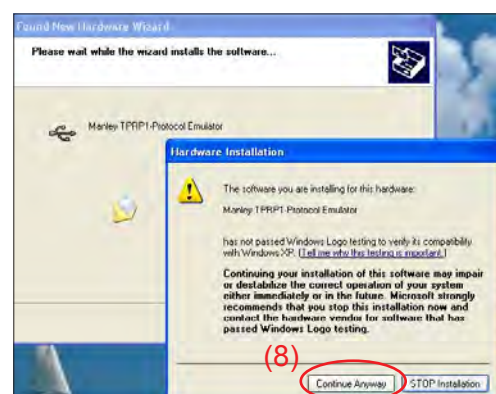
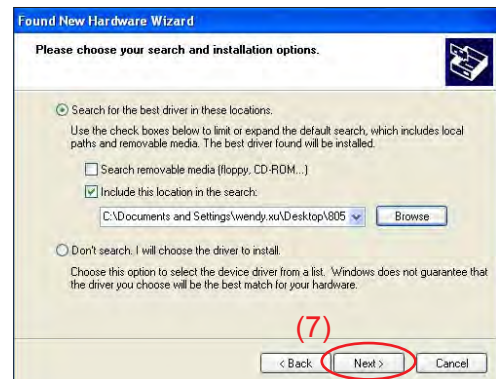
(7) Click "Next".

(8) Click "Continue Anyway".

(9) Click "Finish".

- "Manley TPRP1-Protocol Emulator" will appear on the picture.
- Complete the USB Driver Upgrade Procedure.

Note: If the PC appear "Found New Hardware Wizard" picture again, repeat step 2 to install USB Driver once more.



5-2-4 8051 Firmware Upgrade Procedure

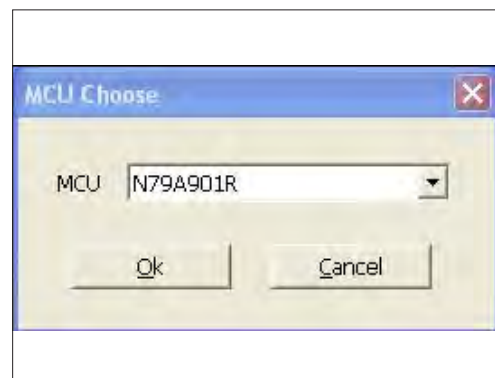
1. Execute 8051 FW Program

- Double click "NLINK V1.2" to execute NLINK program.



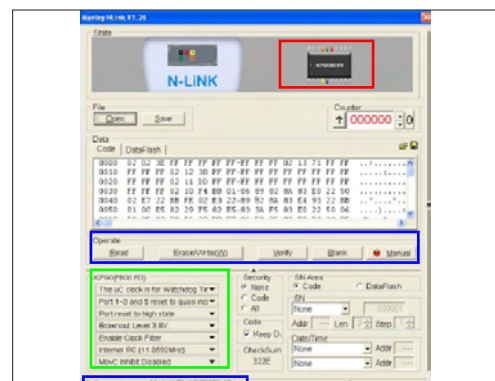
2. Choose the right type of MCU

- "MCU Choose" picture will appear on the screen, select "N79A901R".
- Click "OK".



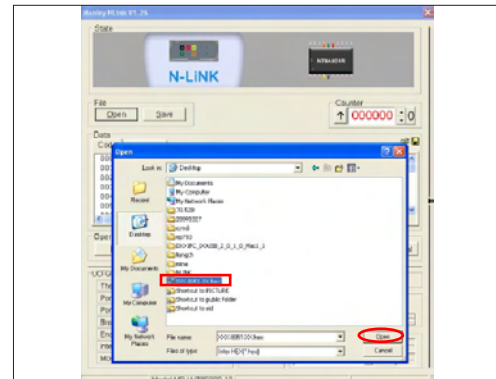
3. Program settings

- "Manley Nlink" picture will appear on the screen.
- Ensure "MCU" Choose" is correct, the picture will show the MCU's type: "N79A901R"(as red square).
- Ensure NLINK Fixture and PC are securely connected, it will show as blue square: the indicator lights green, the state are "Connect".
- Confirm the settings are as green square, such as: "The uC clock is for Watchdog...", "Port 1~3 and 5 reset to quasi ...", "Port reset to high state", "Brownout Level 3.8V", "Enable Clock Filter", "Internal RC (11.0592MHZ)", "MovC Inhibit Disabled".



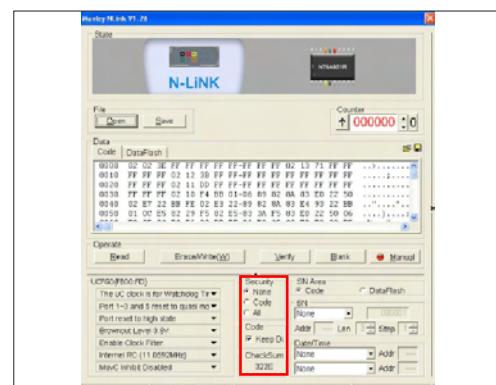
4. Choose 8051 file (*.hex)

- Click "Open".
- Select the 8051 file where you put the file in, then click "Open".



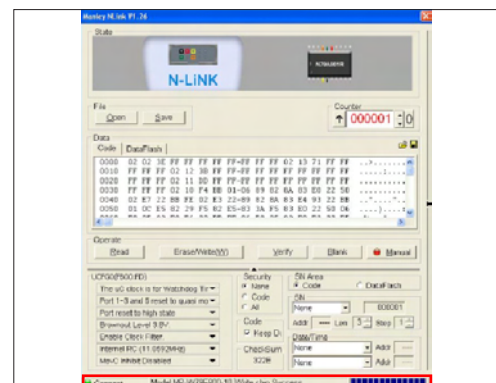
5. Program settings

- In "Security" item, select "None".
- In "Code" item, select "Keep...".
- Checking the "CheckSum" item 322E.
- Click "Erase/Write(W)" to execute 8051 FW upgrade.



6. Finish

- When 8051 FW upgrade process is finished, "Write Chip success" will be shown.



EDID Upgrade

6-1 EDID Introduction

Extended Display Identification Data is a VESA standard data format that contains basic information about a display device and its capabilities, including vendor information, maximum image size, color characteristics, factory pre-set timings, frequency range limits, and character strings for the monitor name and serial number.

The information is stored in the display and is used to communicate with the system through a Display Data Channel (DDC), which sits between the display device and the PC graphics adapter. The system uses this information for configuration purposes, so the monitor and system can work together.

Note: - If a display device has digital input ports, like DVI or HDMI, but without EDID in its main board, the display device will show no image while the input source is digital signal.

- The EDID Upgrade procedure for ES526/EX536/EX531/CB2800/ES526L/EX536L/DS316L is the same, we take ES526 for example here. (EX536/EX531/EX536L have VGA1-IN and VGA2-IN/SCART ports)*

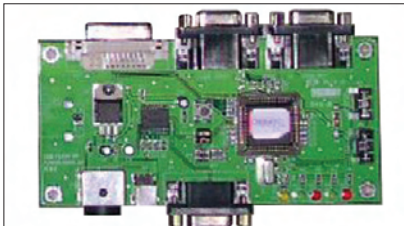
6-2 Equipment Needed

Software

- EDID Program
- EDID File (*.ini)

Hardware

- Projector
- Power Cord for Projector (42.53506G002)
- VGA Cable (42.87305G102)
- RS-232 9 Pin Cable (pin to pin, F-M) (42.83C07G001)
- Generic Fixture (80.00001.001) for EDID Key-in (Fixture: JP3 must be closed)
- Power Adapter (47.57803G001)
- DVI cable: 42.83N06G001
- Monitor
- PC

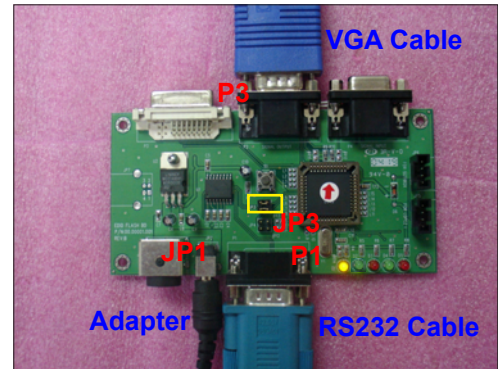


6-3 Setup Procedure

1. Connect all ports

- (1) Connect P1 of fixture with COM Port of PC/Laptop by RS232 Cable.
- (2) Connect P3 of fixture with VGA Port of projector by VGA Cable.
- (3) Plug Power Adapter to JP1 of fixture.
- (4) Power on fixture.
- (5) Plug Power Cord to projector.

Note: You must confirm that the JP3 is closed in all procedure.



6-4 EDID Key-In Procedure

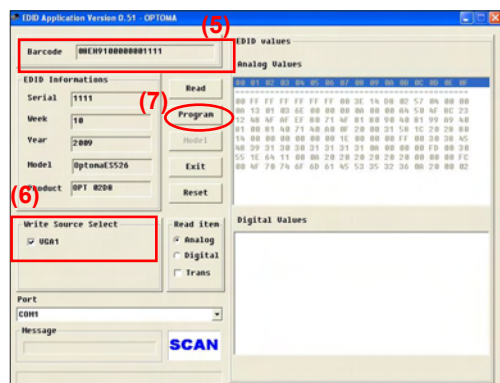
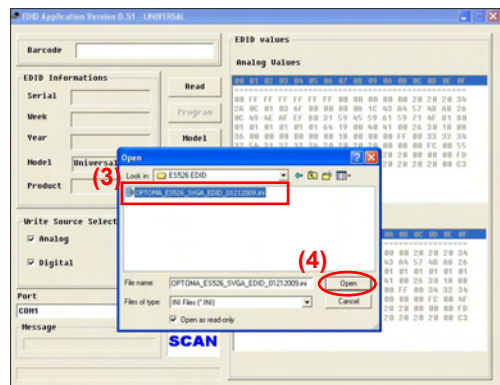
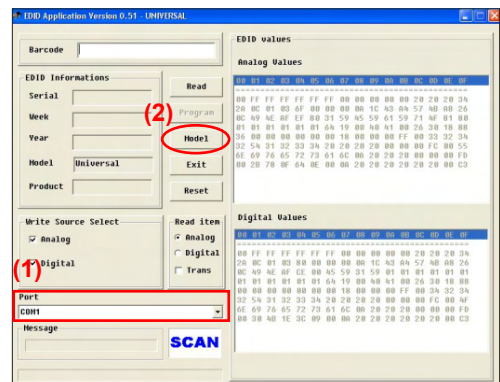
1. Execute EDID Program

- Double click "EDID" to execute EDID program.



2. Process

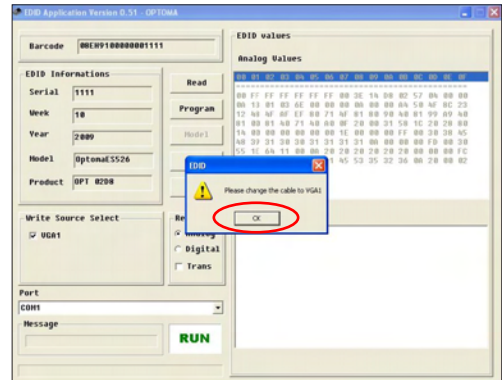
- (1) Select the COM Port which you are using.
- (2) Click "Model".
- (3) Select the source file (*.ini).
- (4) Click "Open".
- (5) Key in the Serial Number into the Barcode blank space.
- (6) In "Write Source Select" item, select "VGA1".
- (7) Click "Program".



3. Change the cable to VGA1

- When the message "Please change the cable to VGA1" appear on the screen, click "OK".

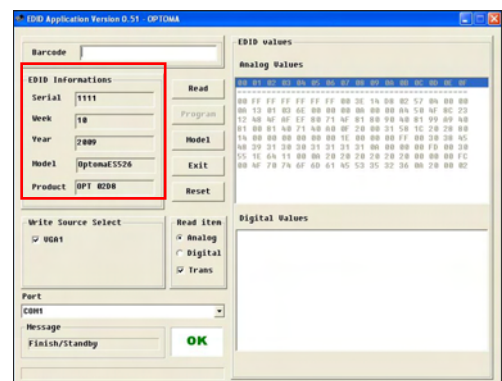
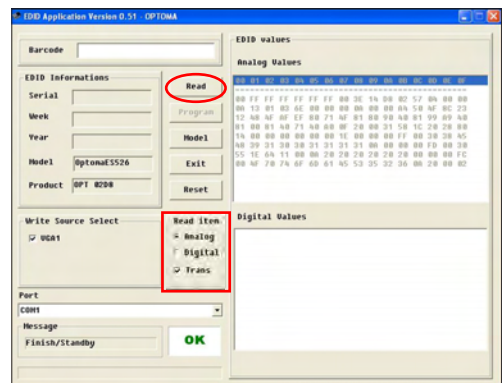
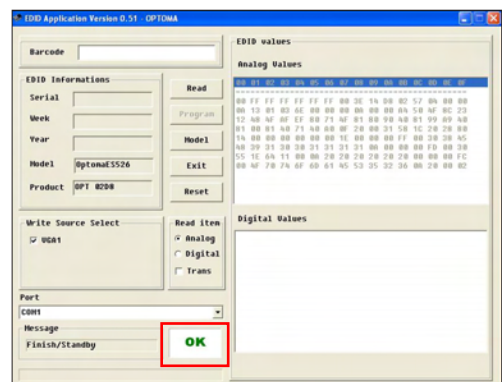
4. When the EDID program is completed, a message "OK" will appear on the screen.



5. Read EDID "VGA" information

- In "Read item", select "Analog" and "Trans", then click the "Read".

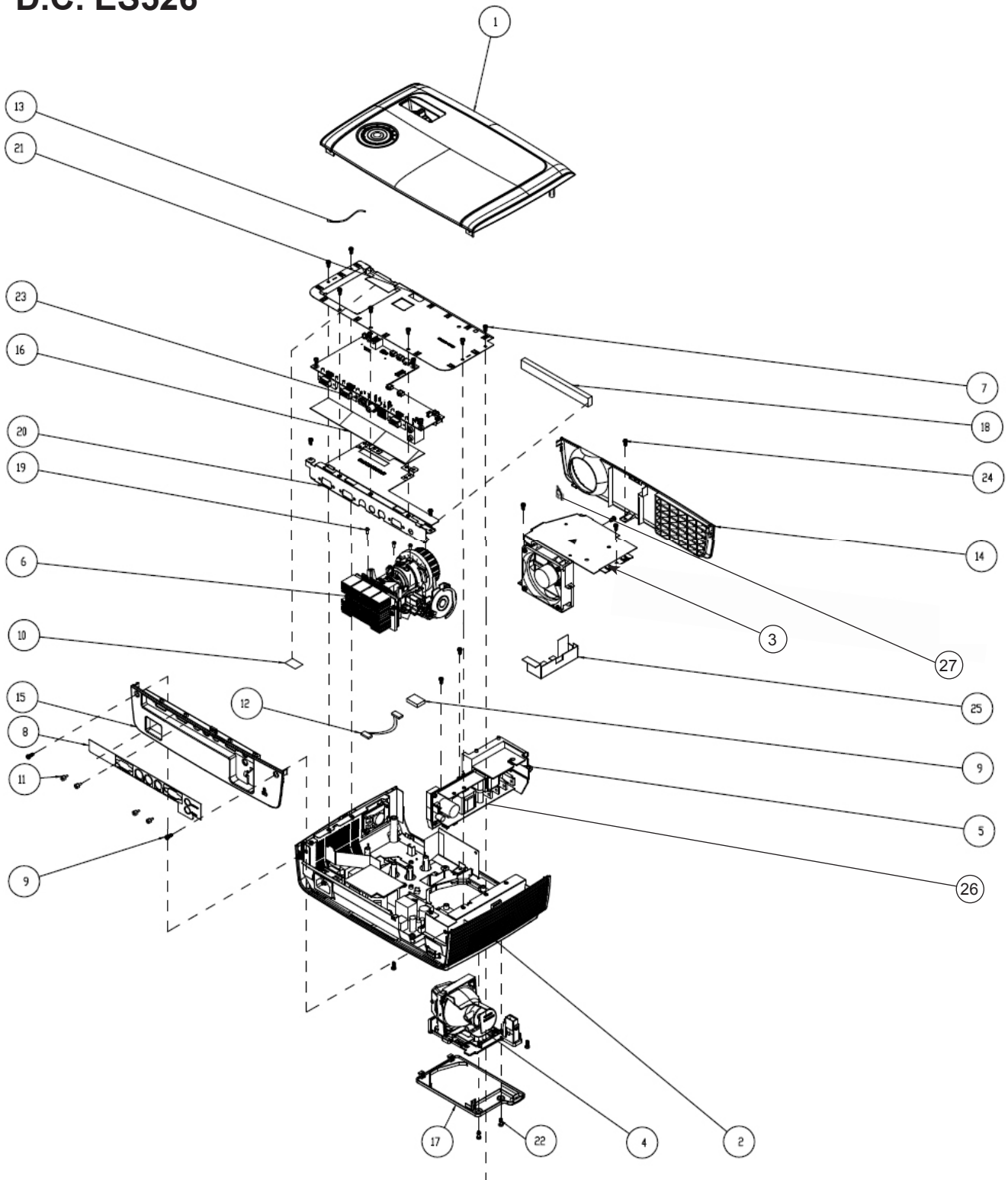
6. EDID informations will show the result.



Appendix A (Exploded Image)

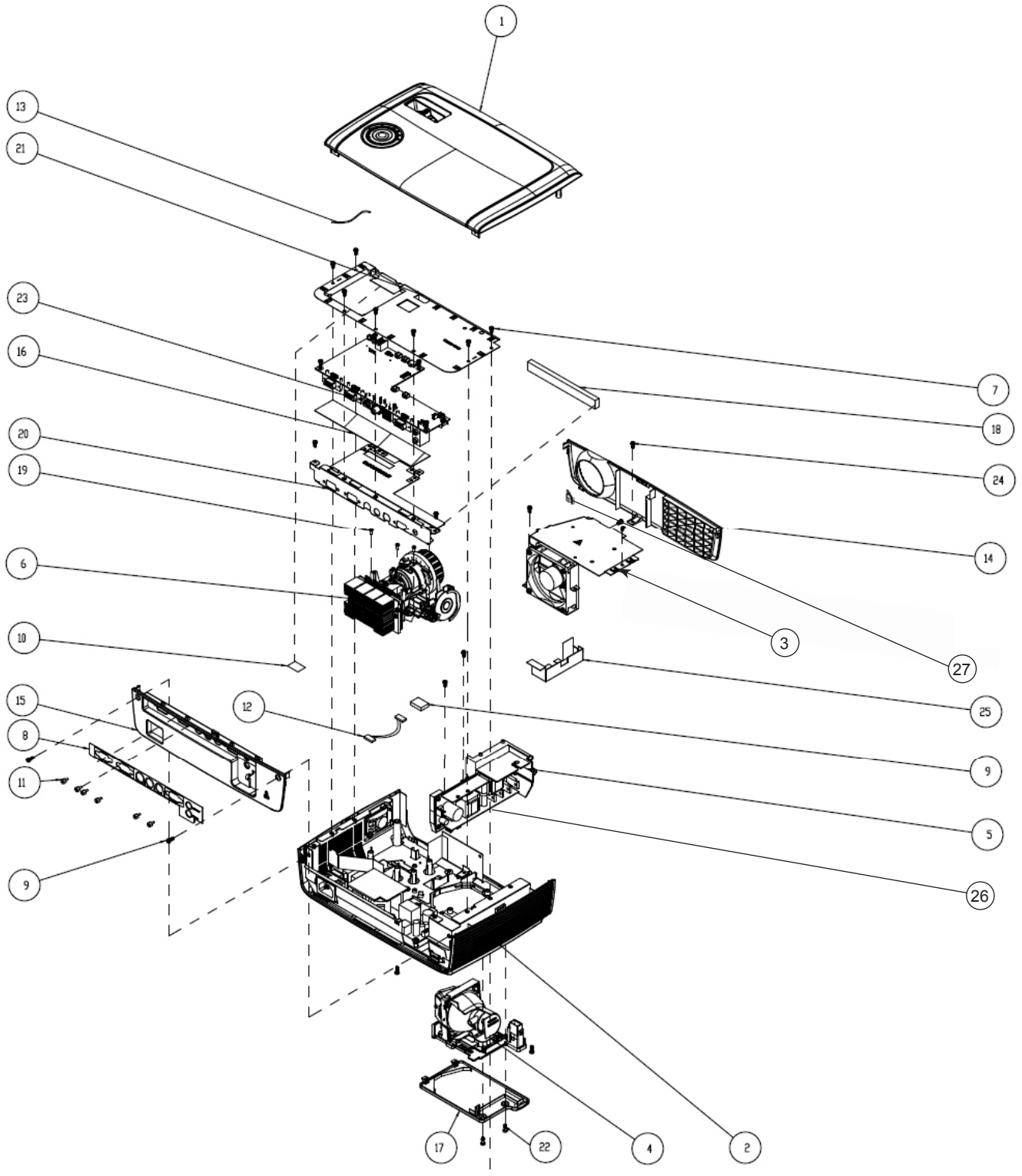
Note: This chapter is only designed to show the exploded image of the projector. For updated part numbers, please refer to RSPL report.

D.C. ES526



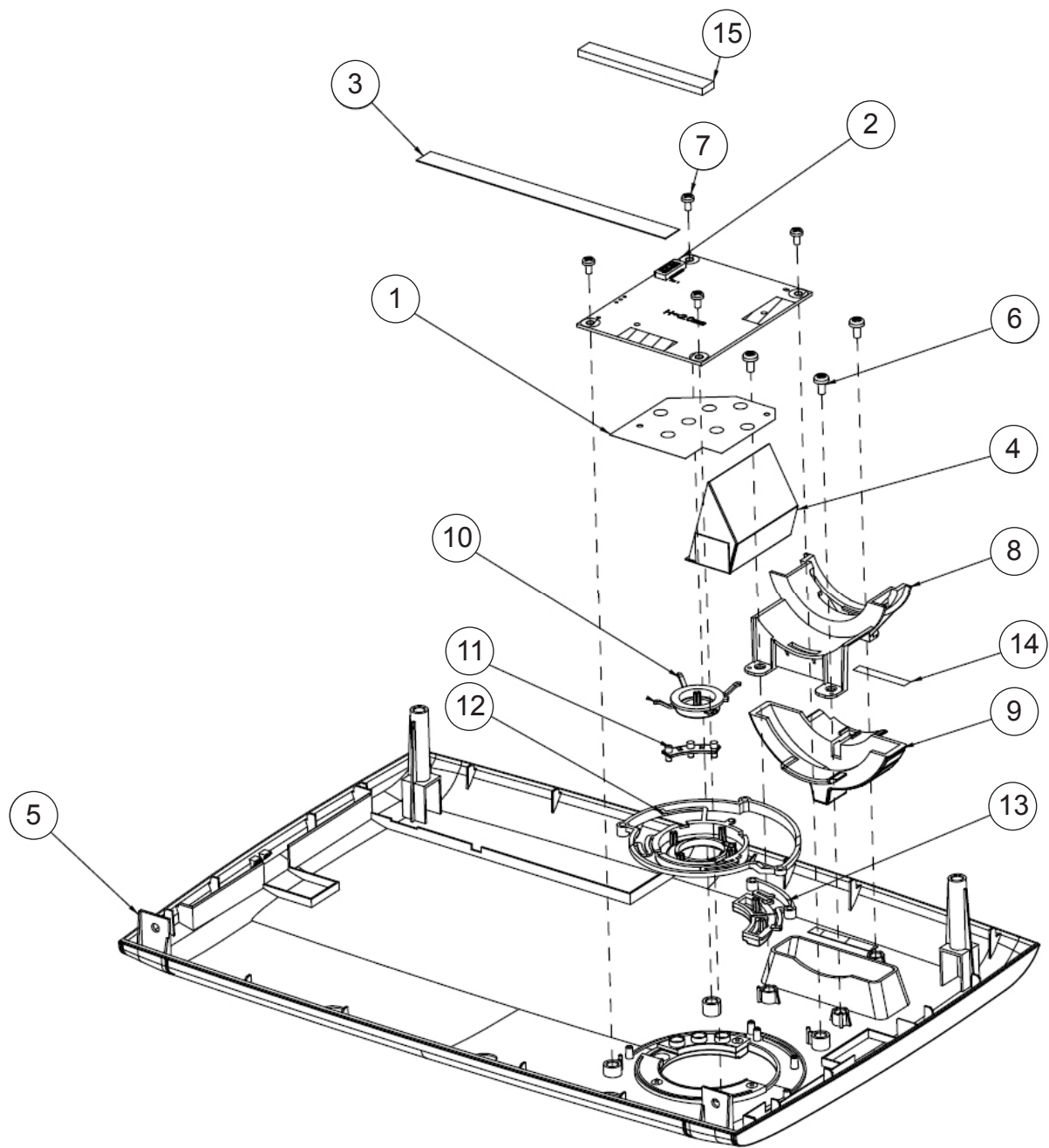
Item	P/N	Description	Parts Supply
1	70.8EH01G001	ASSY TOP COVER MODULE ES526	
2	70.8EH03G001	ASSY BOTTOM MODULE ES526	
3	70.8EH02G001	ASSY ONE FAN MODULE ES526	
4	70.8EH05G001	ASSY LAMP MODULE ES526	
5	51.8CS11G001	LAMP DRIVER HOLDER PPS BLACK PDG-DSU30	
6	70.8EH06G001	ASSY ENGINE MODULE ES526	
7	85.0A123G050	SCREW P/F MECH M3*5 Ni	
	70.8EH13GR01	ASSY IO COVER MODULE FOR ES526 (SERVICE)	V
8	35.8EH01G001	IO LABEL ES526	
9	85.1A323G080	SCREW PAN MECH M3*8 BLACK "GREEN"	
10	41.89Z02G001	HDMI CONNECTOR GASKET L15*W10*H1	
11	85.005AGG308	SCREW HEX I/O #4-40 H3.5*L8 NI NYLOK	
12	42.00454G001	W.A 8P 120mm MB TO LVPS X1160	
13	51.00001G001	CABLE TIE PG-YJ-80	
14	51.8CS03G011	FRONT COVER PC MN3600H ES526	
15	70.8EH04G001	ASSY IO COVER MODULE ES526	
16	51.8CS16G001	MB SHIELDING MYLAR PDG-DSU30	
	70.8EH17GR01	ASSY LAMP COVER MODULE FOR ES526 (SERVICE)	V
17	51.8CS05G001	LAMP COVER PC MN3600H BLACK PDG-DSU30	
18	52.8CS05G001	MB SHIELDING AIR THIGHT PDG-DSU30	
19	85.1A526G060	SCREW PAN MECH M2.6*6 Ni NYLOK	
20	61.8CS05G011	MAIN BD SHIELDING SECC 0.6T ES526	
21	61.8CS04G001	TOP SHIELDING SECC 0.4T PDG-DSU30	
22	61.00018G003	LOCK SCREW PAN MECH M3*8.5-3.5 BLACK(1018+HEAT TREATMENT)	
23	80.8EH01G001	PCBA MAIN BD ES526 SVGA	V
24	85.1A123G060	SCREW PAN MECH M3*6 NI	
25	51.8CS19G001	COLOR WHEEL MYLAR PDG-DSU30	
	70.8EH16GR01	ASSY PHILIPS LAMPDRIVER MODULE 185W FOR ES526 (SERVICE)	V
26	75.8BF03G001	ASSY PHILIPS LAMPDRIVER 185W (EUC 185 dw/B01)	
27	80.88N05G001	PCBA IR BOARD FOR EP721	V

D.C. EX536



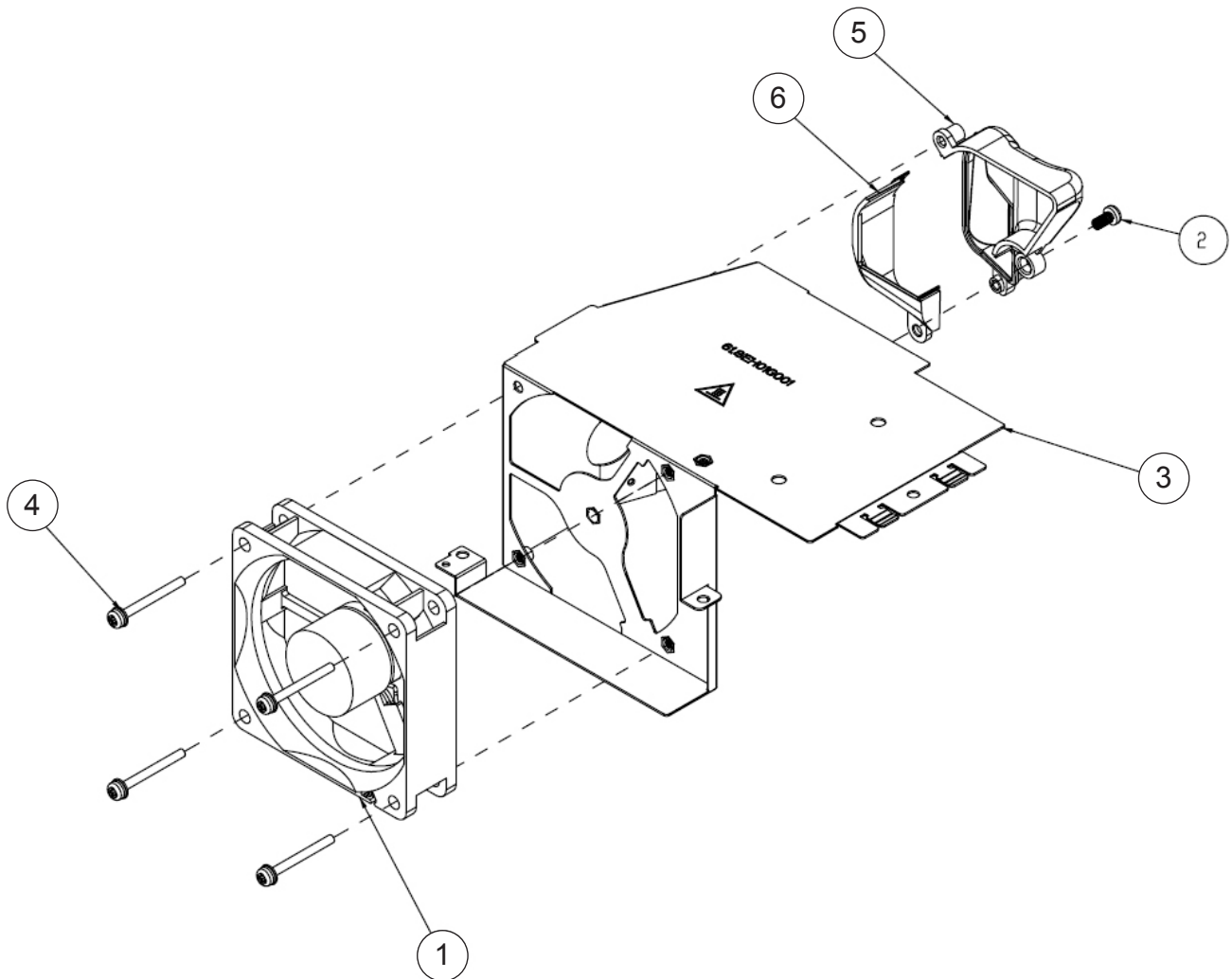
Item	P/N	Description	Parts Supply
1	70.8EH01G001	ASSY TOP COVER MODULE ES526	
2	70.8EH03G001	ASSY BOTTOM MODULE ES526	
3	70.8EH02G001	ASSY ONE FAN MODULE ES526	
	SP.8EH01GC01	LAMP MODULE FOR PROJECTOR ES526/EX536	V
4	70.8EH05G001	ASSY LAMP MODULE ES526	
5	51.8CS11G001	LAMP DRIVER HOLDER PPS BLACK PDG-DSU30	
6	70.8BF01G001	ASSY ENGINE MODULE EX536	
7	85.0A123G050	SCREW P/F MECH M3*5 Ni	
	70.8BF03GR01	ASSY IO COVER MODULE FOR EX536 (SERVICE)	V
8	35.8BF01G001	IO LABEL EX536	
9	85.1A323G080	SCREW PAN MECH M3*8 BLACK "GREEN"	
10	41.89Z02G001	HDMI CONNECTOR GASKET L15*W10*H1	
11	85.005AGG308	SCREW HEX I/O #4-40 H3.5*L8 NI NYLOK	
12	42.00454G001	W.A 8P 120mm MB TO LVPS X1160	
13	51.00001G001	CABLE TIE PG-YJ-80	
14	51.8CS03G011	FRONT COVER PC MN3600H ES526	
15	70.8EH04G001	ASSY IO COVER MODULE ES526	
16	51.8CS16G001	MB SHIELDING MYLAR PDG-DSU30	
	70.8EH17GR01	ASSY LAMP COVER MODULE FOR ES526 (SERVICE)	V
17	51.8CS05G001	LAMP COVER PC MN3600H BLACK PDG-DSU30	
18	52.8CS05G001	MB SHIELDING AIR THIGHT PDG-DSU30	
19	85.1A526G060	SCREW PAN MECH M2.6*6 Ni NYLOK	
20	61.8CS05G011	MAIN BD SHIELDING SECC 0.6T ES526	
21	61.8CS04G001	TOP SHIELDING SECC 0.4T PDG-DSU30	
22	61.00018G003	LOCK SCREW PAN MECH M3*8.5-3.5 BLACK(1018+HEAT TREATMENT)	
23	80.8BF01G002	PCBA MAIN BD GENERIC S450 XGA	V
24	85.1A123G060	SCREW PAN MECH M3*6 NI	
25	51.8CS19G001	COLOR WHEEL MYLAR PDG-DSU30	
	70.8EH16GR01	ASSY PHILIPS LAMPDRIVER MODULE 185W FOR ES526 (SERVICE)	V
26	75.8BF03G001	ASSY PHILIPS LAMPDRIVER 185W (EUC 185 dw/B01)	
27	80.88N05G001	PCBA IR BOARD FOR EP721	V

ASSY TOP COVER MODULE



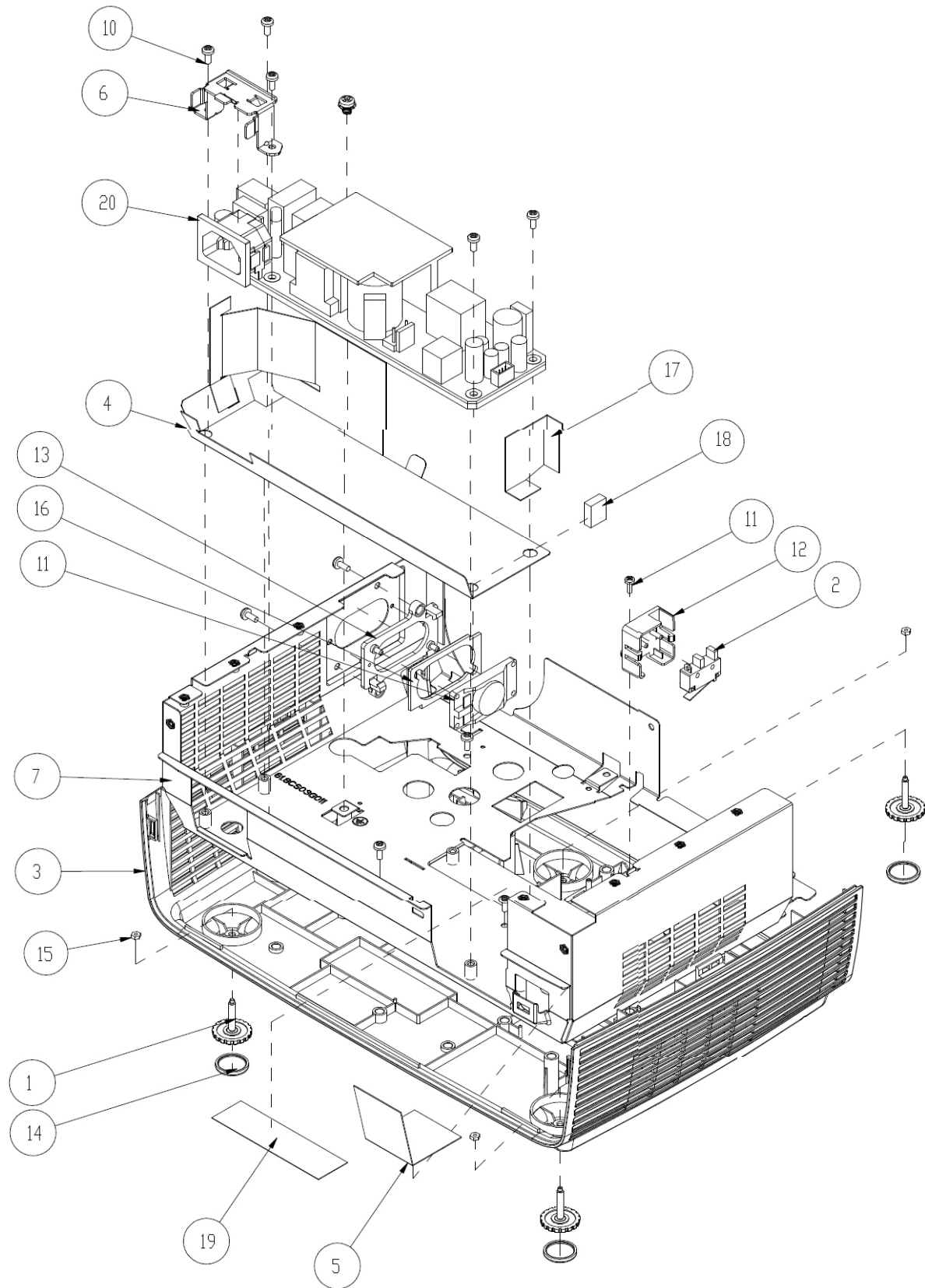
Item	P/N	Description	Parts Supply
1	51.8EH09G001	METAL DOME ES526	
2	80.8EH03G001	PCBA KEYPAD BOARD FOR Z15 GENERIC	V
3	42.00304G001	FFC KEYPAD TO FORMATTER BD 16P P=0.5 122mm HD80	V
4	51.8CS13G001	TOP COVER MYLAR PDG-DSU30	
5	75.8EH01G001	TOP COVER MODULE ES526	V
6	85.1A123G050	SCREW PAN MECH M3*5 Ni	
7	85.3A126G040	SCREW CAP HEAD D7.0 MECH M2.6*4 Ni	
8	51.8CS12G001	ZOOM RING HOLDER PC MN3600H BLACK PDG-DSU30	
9	51.8CS08G001	ZOOM RING PC MN3600H BLACK PDG-DSU30	
	70.8EH11GR01	ASSY ENTER KEY PC OF ES526 (SERVICE)	V
10	51.8EH05G001	ENTER KEY PC MN3600H ES526	
11	51.8EH02G001	LED LENS PC-121 ES526	
12	51.8EH06G001	4WAY KEY PC MN3600H ES526	V
13	51.8EH03G001	IR LENS PC-121R ES526	
14	51.8CS17G001	TEFLON MYLAR 4.5mm*28mm 0.2t	
15	41.89S18G001	EMI GASKET W7*H4*L20 (BLACK)	

ASSY FAN SHIELDING MODULE



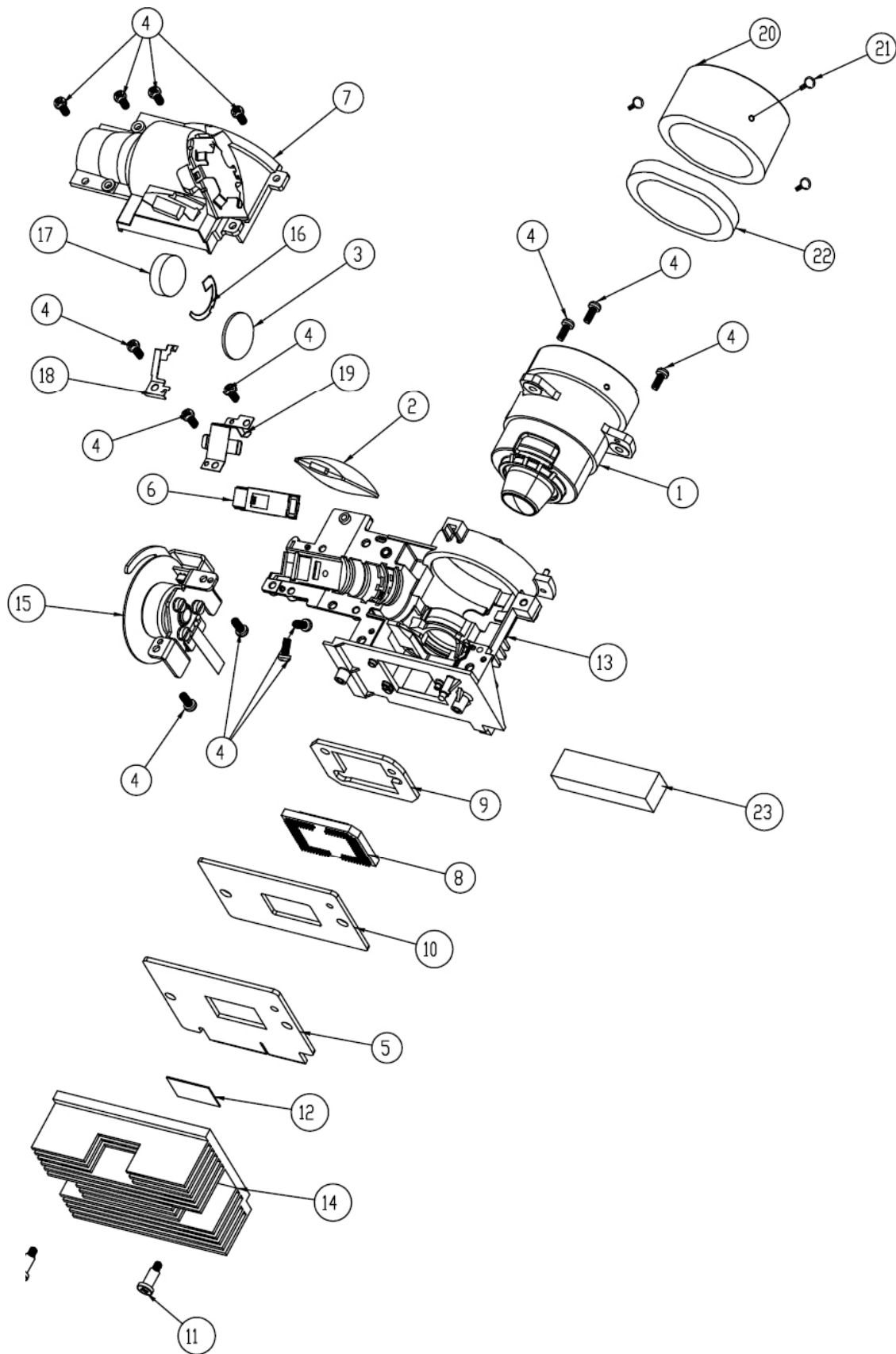
Item	P/N	Description	Parts Supply
1	49.88T01G001	SUNON, KDE1207PKV1-A 70*70*20mm AXIAL FAN	V
2	85.1A123G060	SCREW PAN MECH M3*6 NI	
3	61.8EH01G001	FAN SHIELDING SECC 0.6T ES526	
4	85.1F123G260	SCREW PAN MECH E/SF M3*26 Ni	
5	61.8EH03G001	ONE FAN DUCT AL ALLOY ES526	
6	51.8EH08G001	ONE FAN DUCT CAP PPS+GF40% ES526	

ASSY BOTTOM COVER MODULE



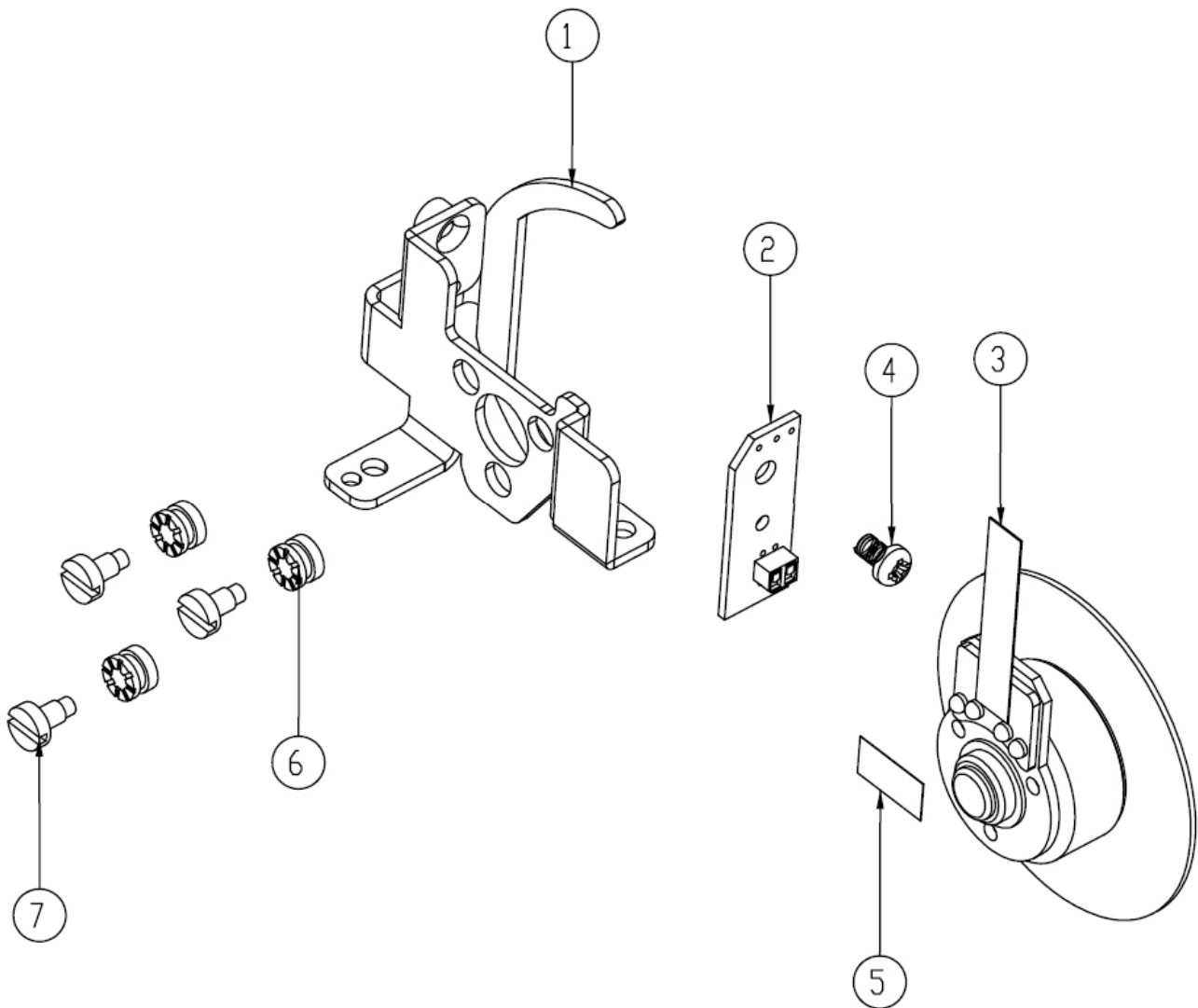
Item	P/N	Description	Parts Supply
1	51.80S21G011	ADJUST FOOT PC+ABS TDP-T9	
2	75.8AA04G001	BUY ASSY INTERLOCK SWITCH 1409X	V
	70.8EH12GR01	ASSY BOTTOM COVER MODULE FOR ES526 (SERVICE)	V
3	51.8CS02G001	BOTTOM COVER PC MN3600H BLACK PDG-DSU30	
4	51.8EH10G001	LVPS MYLAR ES526	
5	51.8CS15G001	K-LOCK MYLAR PDG-DSU30	
6	61.88T19G001	AC INLET BRACKET FOR X1160E	
7	61.8CS03G011	BOTTOM SHIELDING SECC 0.6T ES526	
8	85.1A123G060	SCREW PAN MECH M3*6 NI	
9	85.1A626G050	SCREW PAN MECH M2.6*5 BLACK NYLOK	
10	85.1C224G051	SCREW PAN MECH M4*5 COLOR W/TOOTH WASHER Cr3+	
11	49.8CQ01G011	SPEAKER 2W 8OHM 90mm LB40200083-C198 GP ES526	
12	51.89W18G001	LIMIT SWITCH HOLDER PC MN3600H BLACK TDP-SP1	
13	51.89W17G001	SPEAKER HOLDER PC MN3600H BLACK TDP-SP1	
14	52.86801G001	RUBBER FOOT REAR DP725	
15	86.00122G015	NUT HEX M2.0*0.4P L15 Ni	
16	52.89W04G002	SPEAKER HOLDER PORON L-32 TDP-SP1	
17	51.8CS18G001	FRONT MYLAR PDG-DSU30	
18	41.8EH01G001	EMI GASKET W6*L6*H10	
19	41.88T01G001	EMI TAPE L85*W20	
20	75.8CP01GP01	ASSY MATRITEK 180W LVPS .STAND-BY<1W	V

ASSY ENGINE MODULE



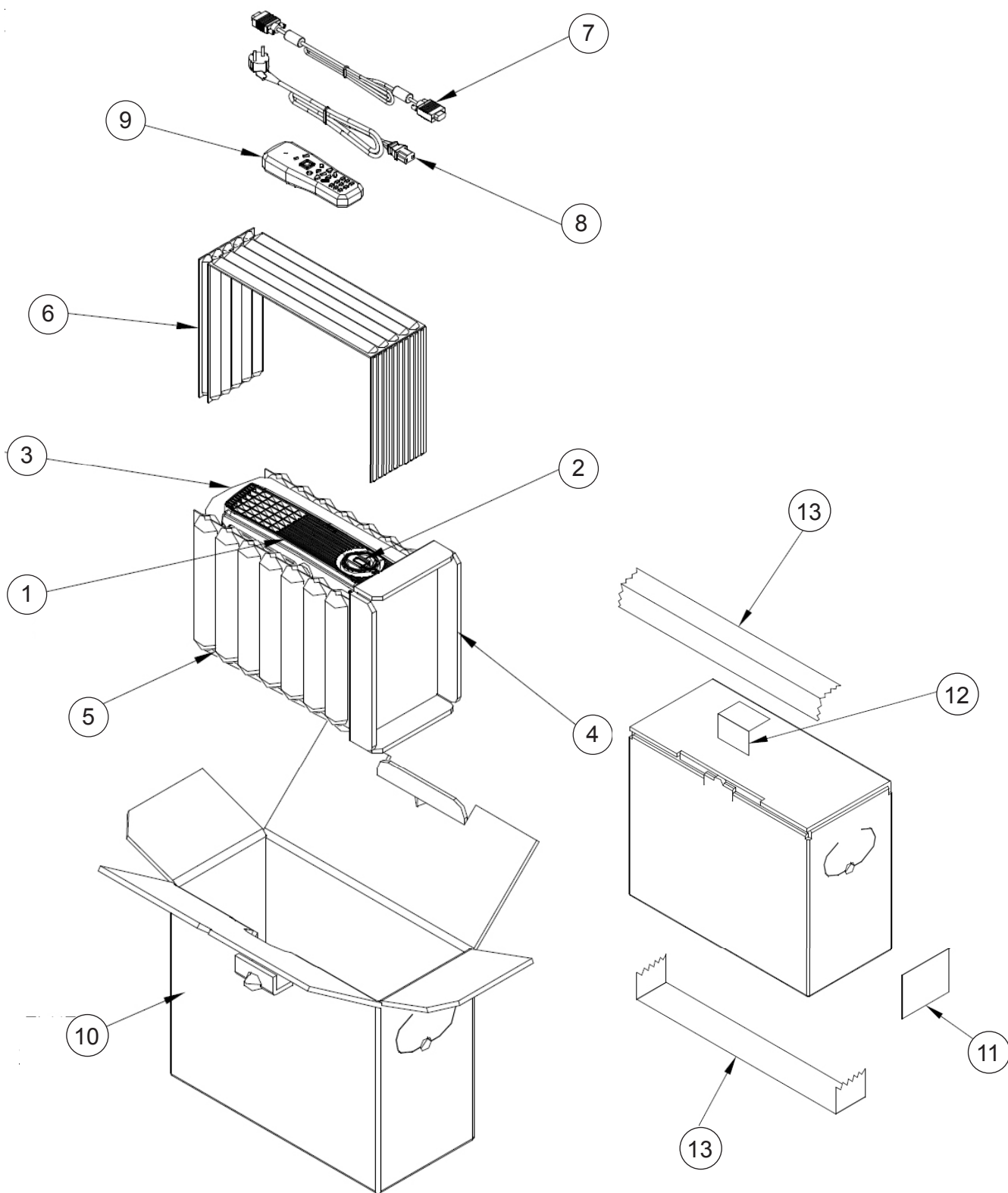
Item	P/N	Description	Parts Supply
	70.8EH14GR01	ASSY ENGINE MODULE FOR ES526 (SERVICE)	V
1	23.8CP01G002	FPL62 PROJECTION LENS	
2	70.8CP15G001	ASSY RELAY MODULE Z15	
3	23.8AH20G001	CONDENSER1 FOR A15W	
4	85.1A526G060	SCREW PAN MECH M2.6*6 Ni NYLOK	
5	80.8CP02G001	PCBA DMD BOARD FOR X1161	V
6	70.8EH18GR01	ASSY ROD MODULE FOR ES526/EX536 (SERVICE)	V
7	70.8CP10G001	ASSY ENGINE BOTTOM COVER Z15	
8	48.8EH01G001	0.55" SVGA 2xLVDS SERIES 450 DMD -8 TI 8060-603cB	V
9	52.8CP01G001	DMD RUBBER X1161	
10	52.8CP02G001	DMD BOARD RUBBER X1161	
11	85.4A826G118	STEP SCREW FOR TYPEX DMD M2.6*11.8mm, X15	
12	52.8CP04G001	S450 0.55" XGA/SVGA DMD thermal pad, FUJIPOLY, Sarcon XR-HE, 18.4x12.5x0.5 mm	V
13	70.8CP11G001	ASSY ENGINE BASE Z15	
14	61.8CP02G001	DMD HEATSINK X1161	
15	70.8CP12G001	ASSY COLOR WHEEL MODULE Z15	
16	61.8EF03G001	CONDENSER LIGHT STOP EX615	
17	23.8AH20G002	CONDENSER 2 FOR A15W	
18	61.88N13G002	ROD COVER NEW SUS301 X15	
19	61.88N12G001	ROD SPRING SUS301,X15	
20	51.8CS07G001	FOCUS RING PC MN3600H BLACK PDG-DSU30	
21	85.WA321G035	SCREW TAP FLAT HEAD M1.7*3.5 Zn	
22	51.8CS20G001	DUSTPROOF SPONGE MYLAR FOR FOCUS RING PDG-DSU30	
23	41.87Y03G001	EMI GASKET W13*H6*L35	

ASSY COLOR WHEEL MODULE Z15



Item	P/N	Description	Parts Supply
	70.8EH15GR01	ASSY COLOR WHEEL MODULE FOR ES526 (SERVICE)	V
1	61.8CP03G001	CW BRACKET SECC X1161	
2	80.8EG04G001	PCBA PHOTO SENSOR BOARD FOR HD20	V
3	23.8BA19G001	COLOR WHEEL YO 6SCW R85Y37G90C28W42B78 FOR P1166/1266	
4	85.1A126G040	SCREW PAN MECH M2.6*4 Ni	
5	51.82Y29G001	TAPE 3M J350 10*5mm FOR COLOR WHEEL DP715	
6	52.83615G001	COLOR WHEEL DISC RUBBER, EzPro755	
7	61.83628G001	COLOR WHEEL SHOULDER SCREW	

A.K.



Item	P/N	Description	Parts Supply
1	DC.8EH01G00E	D.C. ES526	
2	75.8CS02G001	LENS CAP MODULE PDG-DSU30	V
3	51.52109G003	PE BAG 450*350*0.07 FOR OPTOMA	V
4	55.8EH02G001	PARTITION PAPER ES526	V
5	56.8EH01G001	PACKING BOTTOM AIR BAG 480*600MM ES526	V
6	56.8EH02G001	PACKING TOP AIR BAG 240*1050MM ES526	V
7	42.00200G002	CABLE VGA 15P 1.8M BLK EP739	V
8	42.00120G001	CABLE POWER CORD 1.8M SP-023/IS-14 EUROPE	V
9	45.89U01G001	REMOTE CONTROLLER WITHOUT LASER JAECS EP720 & EP726	
10	55.8EH01G001	CARTON AB FLUTE 18KG 395*165*314MM ES526	V
11	35.52302G091	LABEL CARTON 108*92 BLANK	V
12	35.86821G001	LABEL PREVENT OPEN DIM28MM	
13	51.86847G001	3 INCH TRANSPARENT ADHESIVE TAPE FOR EP725(600M)	

Appendix B

I. Serial Number System Definition

Serial Number Format for Projector (take ES526 as example)

Q **8EH** **9** **15** **AAAAA** **C** **0001**

① ② ③ ④ ⑤ ⑥ ⑦

- ① : **Q = Optoma**
- ② : **8EH = Project Code (ES526)**
- ③ : **9 = Last number of the manufacture year (ex:2009 = 9)**
- ④ : **15 = week of the manufacture year (ex:the fifteenth week of the year = 15)**
- ⑤ : **AAAAA = not-defined**
- ⑥ : **C = Manufacture factory (CPC)**
- ⑦ : **0001 = Serial Code**

EX: Q8EH915AAAAAC0001

This label "Q8EH915AAAAAC0001" represents the serial number for ES526. It is produced at CPC on fifteenth of 2009. Its serial code is 0001.

II. PCBA Code Definition

PCBA Code for Projector

A B XXXXXXXXXX C XXX EEEE

① ② ③ ④ ⑤ ⑥

- ① : ID
- ② : Vendor Code
- ③ : P/N
- ④ : Revision
- ⑤ : Date Code
- ⑥ : S/N